CHILD DEVELOPMENT

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All manuscripts should be addressed to William E. Martin, Editor, Child Development Publications, Purdue University, Lafayette, Indiana.

THE VALUE FACTOR IN CHILDREN'S SIZE PERCEPTION[1]

ABRAHAM BLUM
Purdue University

The question of psychological factors influencing size estimation or perceived apparent size has been with us for some years. The report by Bruner and Goodman (2) of their experiment with size estimation of coins was widely accepted as illustrating what psychologists have observed for many years, namely, that an individual's need and value systems affect (or distort) his perceptual processes. However, when Carter and Schooler (6) repeated the Bruner and Goodman experiment, certain of the new findings did not coincide with the earlier results.[2] Bruner and Goodman concluded, "First off, coins, socially valued objects, are judged larger in size than gray discs (matched in size for each of the coins). Secondly, the greater the value of the coin, the greater is the deviation of *apparent* size from actual size" (2, p. 28). On the other hand, Carter and Schooler stated, "It was found that the size of small coins is generally underestimated and the size of large coins is overestimated" (6, p. 207). This was also found for cardboard and aluminum discs.

Such divergent results could only lead to re-evaluation of the original hypotheses and conclusions. Bruner and Rodrigues attempted "to explore some of the factors which might conceivably have produced divergencies in the findings of these two pairs of experimenters" (5, p. 17). They designed their experiment to (a) repeat the original Bruner and Goodman study, (b) utilize the modifications of Carter and Schooler, and (c) include additional variations. Important variations were the establishment of an accuracy-oriented set in half the subjects and a value-oriented set in the

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[1] This research was made possible by a faculty grant from the XL Fund of the Purdue Research Foundation.

[2] Since we are here only interested in "value" as a possible factor in perception of size, we will not discuss results concerned with "need."

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remaining subjects; and the use of three types of light patch size estimation instruments.

The results of this investigation showed that coins were seen as significantly larger than cardboard discs, while metal discs were overestimated more than coins. Bruner and Rodrigues term such comparisons, "absolute level of accentuation." With such results the question of value as a factor in accentuation of size estimation remains unanswered. However, Bruner and Rodrigues used another form of comparison, "relative level of accentuation." They hypothesized that "the increase in overestimation going from a penny to a quarter should be greater for coins than for correspondingly sized discs" (5, p. 19). *Relative* distortion was found to be significantly greater for coins than for other discs, when size estimations of the quarter were compared to size estimations of the penny or nickel.

As for value and accuracy "sets" in relation to size estimation, it was found that "There is a tendency for accuracy set to increase absolute overestimation of discs and coins. With respect to relative accentuation, an accuracy set increases it for valueless discs. For coins, on the other hand, a value set augments relative accentuation under certain conditions. Under others, set has no effect on coins" (5, p. 24). Bruner and Rodrigues also found, "It is difficult to say anything definitive about the effect of the shape of variable light patch used (5, p. 24).

Considering these variable results from three experiments, it would be well to re-examine Bruner and Rodrigues' statement, "Finally, on the basis of the present study and on such others as those mentioned above, it is evident that the value of objects affects their phenomenal appearance" (5, p. 24), since they later conclude, "It appears to us that what differences remain between the original findings of Bruner and Goodman and Carter and Schooler will have to be resolved not by repeating the conditions of their experiments, but by devising new types of experiments . . ." (5, p. 24).

These contradictory interpretations and conclusions could only suggest misgivings about any variable or concept to be included in psychological theory. Why then has there been continued stress on the Bruner and Goodman and/or Carter and Schooler findings when Bruner, himself, felt that the divergencies warranted further investigation?

Perhaps there is a relatively simple answer to this question. Empirical observation over the years has led many social psychologists and personality theorists to the acceptance of value (and need) as organizing factors in phenomenological appearance. One might go so far as to suggest that a form of *a priori* thinking has organized the perception of those who see great importance in experimentally establishing the existence of value as a factor in perception.

The present author readily admits to similar preconceived notions, herein called hypotheses. However, he wishes to differ with certain previous writers in concluding that existing results have confirmed such hypotheses. Rather, theorists and/or experimenters interested in the problem must be prepared to analyze the possible reasons for the existing equivocal findings and formulate more decisive methods for testing (or retesting) the original hypotheses, so that more substantial results may come forth. Obviously such results might prove disastrous to present theory. This is not to be feared, as such, for re-interpretation and re-examination is as vitalizing a force as is: "We found what we *knew* existed."

Since Bruner and Rodrigues found no important differences related to placement of coins, or variation in variable light patch used, it may be the basic variable, value, which must be re-examined. Specifically, the operational use of *coins as valued objects* may need to be reconsidered and the use of a light patch instrument, as such, may be questioned.

Value is at best a relative concept. When one uses a symbol (coin) for which value is in actuality a "secondary" quality, it is difficult to term such an object a socially-valued object or an object of value, per se. By secondary is meant the fact that coins, in themselves, represent value in a purchasing or (ultimately) in an acquisitive exchange sense. Therefore, there exists the problem of what is acquired. Would a child see a quarter as having greater value when it buys castor oil (which he needs) as compared to a penny with which he can buy candy (which he does not need) or as compared to a cardboard disc which he sees as a plaything? Obviously one must consider the context in which value is defined, as well as individually-derived value systems. Although we are here only concerned with the value "factor," it is well to note Luchins' critical comment concerning the factors of need and value in the Bruner and Goodman investigations: ". . . is it entirely reasonable to assume that the need for money is inversely related to the amout of money possessed by one's family? The values that a particular child placed on money and the particular circumstances which might have influenced the child's need for it at the time of the experiment were not taken into account. It seems to us to be a far cry from determining a subject's subjective need for money to assuming arbitrarily that any child in the 'poor group' had more of this 'need' than any child in the 'rich group'" (11, pp. 89-90).

As for the instrument, it is true that Bruner and Rodrigues found no significant differences for the three light patches used, but the very complexity of manipulating a knob to vary the size of a circle of light may introduce extraneous factors. In addition, whether the subject considers the area, perimeter, or diameter of the circle in his size estimations may add to the variability of the obtained results.

EXPERIMENTAL DESIGN

This study, therefore, was designed to re-examine the question of value as a factor in size perception. The specific design considers that value, to the individual, is inherent in the ownership of an object which is deemed desirable by this individual. Each subject's estimation of the length of a valued (owned) object was compared to his estimation of the length of an identical, neutral (not owned) object. With this method each individual was a control for himself, and his estimation of the Critical (value) object was directly comparable to the identical, Noncritical (neutral) object. The use of a linear-type measurement instrument was considered to offer a method of avoiding possible extraneous factors which might occur when "roundness" is involved in size estimation. Similarly, two testings, seven days apart, were used in an attempt to provide results less affected by any special temporal occurrence in the subject's experience.

The subjects were chosen because of the comparative homogeneity of their socioeconomic backgrounds, social experiences in groups, and lack of sophistication in terms of size or measuring nuances. At the same time, since each subject was compared to himself, differences in manipulative or visual ability were considered as not affecting the final results.

The stimuli were chosen on the basis of the interest level and age of the subjects.

Hypotheses

I. The mean size perception of an object will be affected by the presence of value "in" the object. Specifically, the presence of value will accentuate the perceived size of an object as compared to the size perception of an identical object of neutral or no value.

This hypothesis is a restatement of the proposition examined by Bruner and Goodman, Carter and Schooler, and Bruner and Rodrigues.

II. Within a group, most individuals will perceive and behaviorally indicate a valued object as larger than an identical object of neutral or no value.

Hypothesis II was not considered by the previously mentioned investigators. Such an omission seems strange when one notes that the concept of value in previous studies is described as a quality or factor determined by each individual for himself, rather than by the collective group.

Method

Subjects

The children in this experiment attended the Purdue Summer Session Nursery School. They ranged in age from 33 to 59 months. Of the 20 children in the nursery school group, 16 participated in the experiment (one refused the procedure and three did not comprehend the task). In the formulation of the experimental design it was decided to have a younger and older group, arbitrarily defined as above or below 40 months in age. This resulted in an N of 8 for each subgroup. The purpose of this subgrouping was to test for possible age differences in the phenomenon under investigation.

All subjects were children of students at Purdue University. Thirteen of the fathers were graduate students and three were undergraduates.

Apparatus

A diagrammatic sketch of the measurement instrument is shown in Figure 1. The measuring device was modeled after a foot-size fitting stick used in retail shoe stores.

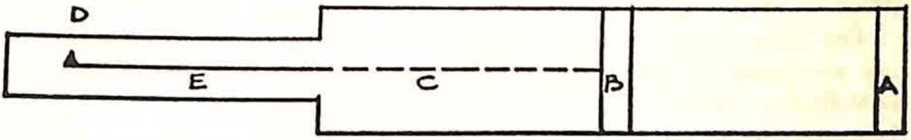

FIGURE 1—A diagrammatic sketch of the measuring instrument.

A is a stationary guide (2⅛ in. high), while B, identical to it, is movable. Attached to the underside of B is a rod, C, whose pointer, D, indicates the actual distance between A and B on the meter stick, E (range = 0 to 51 cm.). Since B can be moved in either direction, size estimations can be shown by moving B away from, or toward, A. Thus, there are two possible starting positions: Open, when B has to be moved towards A and Closed, when B has to be moved away from A.

The subjects were seated in front of the measuring device which rested at the near edge of a table (19¼ in. high). The stimuli were placed on a presentation table 7 ft. from the measuring device. The presentation table was 33 in. high, so that the subject could see the near side of each object but was not able to see the object in depth.

The chair (seat height = 10 in.) was so placed as to have the midline of the subject in a direct line with the center of the presentation table.

Stimuli

A comb, a toy canoe and a home toy were the stimuli for this experiment. Since the subjects were all members of the same nursery school group, each had an identical comb supplied as part of the nursery school washroom equipment. The canoes were furnished to the parents of each child with instructions that the toy be given to the child on designated dates, two days before his testing. In this way each child had his own canoe for an equal period of time prior to testing, despite the fact that the testing time for all the subjects was distributed over four successive days. As a result of this testing schedule there was some variability in the period of ownership of the combs, but not more than three days' difference between any of the children. Each of the home toys was owned by the individual subject prior to the experiment. Home toys were chosen on the basis of availability of duplicates at local stores. This procedure resulted in there being 15 different home toys (baby buggy, miniature football, harmonica, hand iron, etc.), ranging in length from 5.9 to 24.0 cm. Length of ownership for the home toys was not controlled.

Procedure

The children were tested in an office adjacent to the nursery school rooms. The experimental room and the experimenter were known to the children prior to the time of testing. When the canoes were distributed to the parents, a schedule was included, giving the days when each child would be tested. On those days the child brought his home toy and canoe to school.

Each child, after obtaining the two toys and comb from his locker, was taken to the testing room. There, the subject (*S*) was seated at the table. His comb, canoe and home toy were then placed out of view.

Testing I: The examiner (*E*) announced, "We are going to play a game in which we show how big things are. See this block. (Standard nursery school block, 14 cm. in length). If we wanted to show how big it is we could do this." The block was placed in the measuring device, and taken out. "See, that is how big it is. Now you show me how big it is." The apparatus was closed and the block was placed on the presentation table. This procedure was repeated with the measuring device at the Open position.

After the introductory demonstration, *S* was asked to indicate four size estimations for each pair of objects. The instructions were, "Now you show me how big this is." (The testing sequence is described below.)

Testing II: In the second testing, the introductory demonstration by *E* was omitted, but *S* was asked to show the size of the block from the Open and Closed positions. Measurement trials were identical to those in Testing I.

Sequence

The following testing sequence design was constructed:

Testing I: Order of testing subjects and order for presentation of the three objects to each subject were randomized. For each subject, for each of the three objects, the sequence of Open and Closed beginning position of the measuring device was determined at random. The sequence of presentation of Valued (*S*'s toy) and Nonvalued (*E*'s toy) objects for the two Open and two Closed positions (for each object) was then determined at random. Therefore, for each of the three objects, there were eight possible presentation orders (e.g., (1) Open Valued, Open Nonvalued, Closed Nonvalued, Closed Valued; (2) Closed Nonvalued, Closed Valued, Open Nonvalued, Open Valued; (3) . . ., etc.). By this method, each *S* was presented with two successive Open or Closed position trials before the other position was presented. With this sequence, however, no *S* could have more than two Valued or two Nonvalued presentations in succession.

Testing II: The subject order of Testing I was followed to maintain a seven-day interval between testings for each *S*. All other procedures were identical to Testing I.

RESULTS[3]

Valued-Nonvalued

The experimental design called for an analysis of variance of the "repeated measurements" or "split-plot" type, with the subjects divided into two age groups (eight subjects each). The repeated measurement factors were: Testing I vs. Testing II, Valued Object vs. Nonvalued Object, Open beginning position of the measuring device vs. Closed beginning position, and their interactions. Since all of the factors have only two categories (or "levels") each, it was possible to carry out all tests of main effects and interactions in the form of t tests. The procedure was as follows: For each of the "repeated measurements" main effects or interactions, a "score" of the appropriate type was formed for each subject. For instance, for the "Valued vs. Nonvalued" main effect, each subject's "score" was the total of his four estimations of the Valued object minus the total of his four estimations of the Nonvalued object; for the "Valued-Nonvalued by Testing" interaction, each subject's "score" was the difference between his Valued and Nonvalued totals in Testing I minus the difference between his Valued and Nonvalued totals in Testing II. The variance of these "scores" was then computed for each age group, and these two variances were compared with an F test. If this F was not significant at the two-tailed 5 per cent level, the assumption of homogeneity of error variance was considered tenable, and the two variances were pooled for use in the two t tests depending on this error variance (described below). These t tests each had 14 degrees of freedom. On the other hand, if the F was significant, the two variances were not pooled, but were used separately in the two t tests to follow, the degrees of freedom in these t tests then being estimated by the Welch-Satterthwaite method (13). The test of the particular main effect or interaction in question then consisted of a t test on the average of all 16 "scores" of the type described above, testing the hypothesis that this average was merely a random deviation from a "true value" of zero. Using the same error variance, the test of the interaction with age groups of this main effect or interaction consisted of a t test of the difference between the age group means for the same "scores." Besides facilitating the carrying out of the tests in the presence of significantly nonhomogeneous error variance (which did occur several times), this method also made it possible to carry out *one-tailed* tests of main effects or interactions, where this was indicated. For example, in the test of the difference between average size estimation of Valued objects and average estimation of Nonvalued objects, the former was expected by hypothesis to be larger, and the *one-tailed* test was appropriate.

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[3] Grateful acknowledgement is made to James Norton of the Purdue Statistical Laboratory for his invaluable assistance in the formulation and description of the statistical analysis and corresponding sections of the experimental design.

An analysis of the type described above was carried out for each of the classes of objects used in this experiment: comb, canoe, and home toy. In the case of the home toy, two such analyses were performed, one in which the *absolute* size estimations were used as the basic data for the analysis, even though the actual size of the toy differed from child to child, and the other in which the basic data were the *relative* size estimations, i.e., absolute size estimation divided by actual size of toy.

In Table 1 it is seen that the Valued estimations averaged significantly larger than the Nonvalued estimations for the comb and the canoe, whereas the Valued and Nonvalued average size estimations for the home toy were approximately equal.

TABLE 1

AVERAGE DIFFERENCE IN SIZE ESTIMATION BETWEEN VALUED AND NONVALUED OBJECTS

Object	*Average Difference* $(N = 16)$	*Standard Error of Difference**	t $(14\ df)$	*Level of Significance* (one-tailed t test)†
Comb	1.77 cm.	.839 cm.	2.11	5%
Canoe	2.10 cm.	.757 cm.	2.77	1%
Home toy (absolute size)	−0.11 cm.	.831 cm.	−0.13	N.S.
Home toy (relative size)	−0.02 cm.	.068 cm.	−0.23	N.S.

* Assumption of homogeneity of error variance was tenable in all these cases.

† For 14 df: $t_{95} = 1.76$, $t_{99} = 2.62$.

Relative Level of Accentuation

To compare the average Valued-Nonvalued differences for the three types of objects, a "repeated measurements" type of analysis of variance was performed in which the individual observations were the average Valued-Nonvalued difference for each child, for each object. The children were separated into age groups, as before. Two such analyses were performed. In the first the observations were the actual differences. In the second, the observations were the differences divided by the actual size of the corresponding object. In both analyses, when individual comparisons were made among the average differences for the three objects, no significant differences were found among these average differences.

In actual (absolute) size units, the comb (13.1 cm.), home toy (average = 14.0 cm.) and canoe (24.6 cm.) have average Valued-Nonvalued differences of 1.77 cm., −0.11 cm. and 2.10 cm. respectively (see Table 1). The difference between any two of these required for significance at the 5 per cent level is 2.38 cm. (7). In relative units (estimated size divided by actual size), the three objects yield average Valued-Nonvalued differences of .135, —.016 and .085, respectively. The difference between any two of these required for significance is .176.

Table 2 presents the number of subjects who estimated each Valued object as larger on the average than the corresponding Nonvalued object. It is seen that although in all cases half (eight) or more of the children accentuated the size of the Valued objects, in only one case, for the canoe, was the number of children significantly greater than the chance expectancy of one-half.

TABLE 2

NUMBER OF SUBJECTS WHOSE MEAN ESTIMATE OF THE VALUED OBJECT WAS LARGER THAN THE MEAN ESTIMATE OF THE NONVALUED OBJECT ($N = 16$)

Object	*Number of Subjects Estimating Valued Object on the Average as Larger*	*Level of Significance* (one-tailed binomial test)*
Comb	10	N.S.
Canoe	12 (plus one tie)	5%
Home toy (absolute size)	8	N.S.
Home toy (relative size)	8	N.S.

* From Binomial Tables, the probability of 12 or more out of 16 estimating the Valued object as larger by chance is approximately .04.

Significance tests were also made for the other three main effects provided by the experimental design, as well as six first-order interactions and three second-order interactions. These tests were made for each of the three objects, using both absolute and relative data for the home toy. Of these 48 tests, only one, a second order interaction, was found to be significant.

DISCUSSION

Two interrelated questions arise from these findings: Why are the valued objects in two cases (comb and canoe) seen as significantly larger than identical objects, while the third (home toy) is not? Secondly, why was this the case when the home toy might be expected to be even more "valued" than either the canoe or the comb? The latter question is even more interesting in light of the Bruner and Rodrigues concept of "relative level of accentuation" which suggests that the greater the comparative value of an object the greater will be the overestimation of its size.

It can only be suggested that since it was necessary to use as home toys objects available in local stores, (a) the experimenter may not have been successful in obtaining toys which had significant value to the individual children, (b) many of the home toys were not predominantly linear in construction as were the comb and canoe, (c) for young children variability in the period of ownership may effect the value of a toy.

CONCLUSIONS

It may be concluded that value, as herein defined, (a) does affect size estimation and (b) accentuates apparent size of an object for the perceiver (Table 1 presents results for Hypothesis I). This statement must be qualified, however, because for one of the stimuli such a conclusion is not justified. It may be important to note that this stimulus, the home toy, was different for 15 of the 16 subjects and it was previously observed that other extraneous factors may have been involved. In addition, it is noted that the effect of value upon size perception is accentuation of *average* estimated size of the comb and canoe for the group, but this is not necessarily true for each individual (Table 2). Beams (1) reports parallel results. He found that for a total of 60 subjects, on the average, "liked" foods were seen as significantly larger than "disliked" foods. However, nine of his subjects saw "disliked" foods as larger than "liked" foods. This latter finding led Beams to suggest, ". . . that there are questions regarding 'perceptual distortion' still unanswered" (1, p. 199).

The primary question seems to be: What classification of value is a factor in size perception? Is it value in the social sense (coins), value in terms of affectivity, value in terms of ownership or a combination of these and/or other types of values, which create size distortion? It may well be that the answer to this question will be different for each individual perceiver. Such an answer might also provide knowledge concerning the specificity of value for individuals.

Noting the results, a variation of the above question may suggest that it is the object of value itself which must be investigated. This concept has many facets; usage, availability, familiarity, social pressures, cultural standards, all of which may be involved in individual value and need systems. If such is the case, then past investigations have barely scratched the surface of the problem of value as a factor in perception.

One would presume that in cultures where increasing size is not a positive "attribute," if size distortions occur at all, they may occur in either direction. Likewise, the direction that was found (overestimation), may be specific for a particular segment of our culture. It is interesting to note that Bruner and Postman discuss a similar concept in terms of symbolic negative and positive values when concluding, "The *direction* and *magnitude* of accentuation, however, may be a function of the particular values involved" (4, p. 207).

On the question of possible age differences, of greater magnitude than in this sample, it would be important to know whether another study, similar to this one, would find similar results for a sample of 9- to 11-year-old children (as were used by Bruner, Carter, etc.). Such a finding would allow for much greater generalization and possibly supply a more definitive solution to the dilemma created by the previous contradictory results. Such a re-examination of these findings based on older subjects may be fruitful, especially since Beam's results were found with subjects drawn from fifth and sixth grade classes (10-12 years).

SUMMARY

Because of the variable results previously reported for size estimation of valued and nonvalued objects, a new experimental design was devised. Size estimations were made on a linear scale device for three sets of stimuli. Each set consisted of two identical objects, one having value to the subject (by virtue of ownership), and the other object being of neutral or no value.

Size estimations were obtained from 16 children between the ages of 33 and 59 months. The results of a comparison of these size estimations, for two of the three sets of objects, support the hypothesis that value is an accentuating factor in size perception.

The hypothesis that more individuals would estimate the valued object as larger than the neutral object was not supported by the data. Only one valued object was seen as larger by significantly more than half of the sample, although eight or more subjects did perceive the size of the other two valued objects as larger than the corresponding nonvalued objects.

The data were also analyzed to test for the concept of "relative level of accentuation." This was done using absolute and relative (absolute divided by actual) size estimations. In neither case did the present results support the Bruner and Rodrigues findings.

It is suggested that the simplified measuring device used in this study may have contributed to the possibility of obtaining precise size estimations from very young children. It is further suggested that this method be used with older children and adults in order to re-examine groups similar to the subjects used in previous investigations.

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AFFECTIONAL AND AGGRESSIVE BEHAVIOR OF PRESCHOOL CHILDREN[1]

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Much has been learned about children's aggressive behavior (e.g., 1, 2, 3, 4, 5, 6, 7, 8, 11, 12), but little is known about the behavior of young children which is friendly or affectional in nature, or the comparative frequency with which young children express affectional and aggressive behavior. The objectives of the present study were to compare with respect to age and sex: (a) the number of affectional and aggressive responses evidenced during self-directed activity periods in a nursery school-kindergarten setting, (b) the frequency with which preschool children initiated contacts by means of either affectional or aggressive behavior, and (c) the individuals (boys, girls, adults) chosen as the recipients of these contacts.

Affectional behavior was defined in the present study as behavior directed toward another person which indicated warm regard, friendliness, sympathy, or helpfulness. Aggressive behavior was defined as an actual attack or threatened attack upon another person, whether it be by gesture or hostile or provocative language directed toward another child or adult (1). Affectional or aggressive behaviors directed toward objects or animals were not recorded. Nor was the component of behavior which is generally thought of as "aggressiveness," i.e., behavior which involves self-assertiveness and the ability to make contacts, investigated in this study.

Contacts and *responses* were differentiated in the present analysis depending upon when they occurred in an interaction sequence. If, for example, a given behavior were evidenced during an observation period after interaction between two or more persons was already in progress, the behavior was designated as a *response*. However, if an affectional or aggressive behavior were employed in order to initiate interaction with another person or persons it was designated as a *contact*. Thus, if a child praised another child during a play period during which interaction between the two chil-

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[1] This study was conducted at Oklahoma A. & M. College. Grateful acknowledgement is made for the support of the Oklahoma A. & M. College Research Foundation.

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dren was already in progress, the behavior was recorded as a response. But if a child used praise as a means of initiating interaction, it was recorded as a contact. This differentiation was made in order to determine the kinds of responses boys and girls employ in initiating contacts at various age levels.

SUBJECTS

The subjects studied were 124 children attending the Oklahoma A. & M. College nursery-kindergarten schools. There were 13 male and 13 female two-year-olds, 22 male and 14 female three-year-olds, 17 male and 14 female four-year-olds, and 17 male and 14 female five-year-olds. Slightly over a third of the subjects were children of college students; approximately a third were children of parents whose occupations were of a professional nature, and the remaining third were children of parents whose occupations were of semi-professional, skilled, or semi-skilled nature.

PROCEDURE

Direct observation employing predetermined categories and a time-sampling technique provided the methodology used in this study. The affectional categories were selected on the basis of a preliminary study that involved running records designed to yield suggestions for meaningful categories and from an analysis of the available categories reported in the literature. The aggressive categories were adapted from those reported in an unpublished paper by Dr. Jacob L. Gewirtz of the University of Chicago. Observation with the categories selected initially indicated need for revision and clarification. Constant revision of the instrument over a three-month period prior to the study yielded a final form consisting of 11 affectional and 18 aggressive categories.

The categories appeared on a check sheet designed to facilitate recording. All of the affectional and aggressive behaviors which occurred within a given minute were recorded by checking the appropriate category. Forty one-minute observations were made on each child, making a total of 4,960 observations of one-minute duration. The results of this study are based on these observations.

Categories

The categories used in the study appear below. It will be noted that some of the categories contain more than one kind of behavior. The infrequency with which certain behavior occurred led to the grouping of certain behaviors into a single category when it seemed to the investigators that the behaviors were logically related. Brief descriptions and definitions of the categories are presented in several instances where needed to provide clarity.

Physical Affection: This over-all category contains six subcategories

a. *Compliant,* i.e., conforms to another's desire or request;
b. *Kisses*;
c. *Pats, Fondles, Hugs*;
d. *Smiles, Laughs with Someone*;
e. *Helpful, Shares,* i.e., gives assistance to another, divides materials with others;
f. *Sympathetic.*

Verbal Affection: This over-all category contains five subcategories

a. *Accepts,* i.e., receives with favor, approves;
b. *Asks Permission, Requests*;
c. *Speaks in Friendly Manner,* i.e., talks with another in such a manner so as to reassure, to express warm feelings for the person;
d. *Compliments, Praises*;
e. *Offers to Compromise, Share, Cooperate.*

Physical Aggression: This over-all category contains eight subcategories

a. *Annoys, Teases, Interferes*;
b. *Hits, Strikes*;
c. *Competes for Status,* i.e., attempts to "show up" another by performing better;
d. *Threatening Gesture*;
e. *Pursues,* i.e., runs after or follows with the intent of inflicting a blow;
f. *Snatches or Damages Property of Others*;
g. *Negativism,* i.e., refuses to work with or conform to the directions of another;
h. *Pushes, Pulls, Holds.*

Verbal Aggression: This over-all category contains ten subcategories

a. *Commands, Demands*;
b. *Cross-Purposes,* i.e., conflict over ways of using equipment;
c. *Disparages,* i.e., makes remarks indicating dislike for another person, finds fault with or censures or condemns another's behavior, humiliates, laughs at another's misfortune, mocks, expresses desire that another be the victim of imperious events, attributes bad qualities to another;
d. *Injury via Agent,* i.e., entices another person to injure a third person;
e. *Refuses to Comply*;
f. *Rejects,* i.e., denies activity or privilege to another;
g. *Shifts Blame*;
h. *Tattles*;
i. *Claims Possession*;
j. *Threatens.*

Conditions of Observation

1. Observations were made during self-directed activity periods. No observations were made in situations in which the teacher was directing the activity, e.g., story or music periods.

2. The children were chosen for observation according to an established order. If a child was absent, an observation was made on the next child whose name appeared on the list.

3. The observer sat near the child so that any conversations could be heard easily.

4. Not more than two observations were made on any one child during a given day, and no two observations were made on one child consecutively.

5. Each observation lasted one minute. Time was recorded by the use of a stop watch.

6. If a teacher initiated any contact with a child during the period in which the child was being observed, the data collected for the interval were discarded. The child's record sheet was placed at the bottom of the pile, and the observation was made later.

Reliability

After the categories were in their final form, observations with the categories were undertaken to determine whether or not the observers could observe reliably with the categories. These preliminary observations were made for the purpose of obtaining measures of reliability and were made before the data were collected. The investigators, referred to as observers A, B, and C, made 40 one-minute observations simultaneously but independently. Twenty of the observations were made of a group of 20 children (Group I). The same procedure was followed with another group of children (Group II). The percentages of agreement obtained between the observers are presented in Table 1.

TABLE 1

PERCENTAGES OF AGREEMENT BETWEEN OBSERVERS

Observer	*Group I*	*Group II*	*Average*
A with B	.86	.87	.865
A with C	.81	.83	.820
B with C	.87	.84	.855
Average	.847	.847	.847

RESULTS AND DISCUSSION

Frequency of Affectional and Aggressive Responses

The average frequencies of affectional and aggressive responses evidenced within the 40 one-minute observations of each of the 124 children are presented in Table 2. Inspection of these data indicates that, with the exception of the two-year-olds, affection was much more frequently expressed verbally than physically. At all age levels affectional responses outnumbered aggressive responses, and at the four- and five-year levels there was a tendency for the children to express their aggression verbally rather than physically.

The levels of significance of the differences between the mean number of (a) physical and verbal affectional responses, (b) physical and verbal

TABLE 2

MEAN NUMBER OF AFFECTIONAL AND AGGRESSIVE RESPONSES

Age (Years)	*Sex*	*N*	AFFECTIONAL RESPONSES *Physical*	*Verbal*	*Total*	AGGRESSIVE RESPONSES *Physical*	*Verbal*	*Total*
2	Boys	13	17.1	15.0	32.1	5.6	5.0	10.6
	Girls	13	18.1	17.0	35.1	3.0	1.8	4.8
3	Boys	22	18.5	28.8	47.3	7.7	7.1	14.8
	Girls	14	15.6	26.8	42.4	2.6	6.7	9.3
4	Boys	17	19.8	33.9	53.7	7.4	7.8	15.2
	Girls	14	19.4	33.4	52.8	5.0	8.1	13.1
5	Boys	17	17.8	34.5	52.3	8.0	10.8	18.8
	Girls	14	18.9	31.1	50.0	2.3	9.5	11.8

aggressive responses, and (c) total affectional and total aggressive responses are given in Table 3. A comparison of the differences in number of physical affectional responses and verbal affectional responses indicates that both the boys and girls at the three-, four-, and five-year levels evidenced a significantly greater number of verbal affectional responses. The difference in kinds of affectional responses, i.e., physical and verbal, made by the two-

TABLE 3

SIGNIFICANCE OF DIFFERENCES BETWEEN MEAN NUMBER OF
(1) PHYSICAL AND VERBAL AFFECTIONAL RESPONSES,
(2) PHYSICAL AND VERBAL AGGRESSIVE RESPONSES, AND
(3) TOTAL AFFECTIONAL AND TOTAL AGGRESSIVE RESPONSES*

Age (years)	*Sex*	*Physical Aff.* *Verbal Aff.* *p*	*Physical Agg.* *Verbal Agg.* *p*	*Total Aff.* *Total Agg.* *p*
2	Boys			.001 *T Af.*
2	Girls			.001 *T Af.*
3	Boys	.001 *V Af.*		.001 *T Af.*
3	Girls	.001 *V Af.*	.01 *V Ag.*	.001 *T Af.*
4	Boys	.001 *V Af.*		.001 *T Af.*
4	Girls	.001 *V Af.*		.001 *T Af.*
5	Boys	.001 *V Af.*		.001 *T Af.*
5	Girls	.001 *V Af.*	.01 *V Ag.*	.001 *T Af.*

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* Direction of the difference is indicated by the symbol appearing at the right of the confidence levels. *V Af.* = verbal affection; *V Ag.* = verbal aggression; *T Af.* = total affectional responses.

year-olds was not significant. The three-year-old girls and the five-year-old girls were more verbally aggressive than they were physically aggressive. At all age levels the total number of affectional responses exceeded the total number of aggressive responses, the differences being significant at the .001 level of confidence in every instance.

In Table 4 are presented the levels of significance of the differences between age groups in mean number of affectional responses and in mean number of aggressive responses. Although in the majority of instances the differences in affectional responses were not significant, the evidence indicates that (a) the three-year-old boys and girls expressed more verbal affection than did the two-year-old boys and girls, (b) the four-year-old boys expressed more verbal affection than did the three-year-old boys, and (c) the three-year-old boys made a greater number of total affectional responses than did the two-year-old boys. The three-year-old girls were more verbally aggressive than were the two-year-old girls, and the total number of aggressive responses of the three-year-old girls was significantly greater than that of the two-year-old girls. The four-year-old girls evidenced a greater number of physically aggressive responses than did the five-year-old girls.

TABLE 4

SIGNIFICANCE OF DIFFERENCES BETWEEN AGE GROUPS IN MEAN NUMBER OF AFFECTIONAL RESPONSES AND IN MEAN NUMBER OF AGGRESSIVE RESPONSES*

Response	*Sex*	*2-Yr-Olds 3-Yr-Olds p*	*3-Yr-Olds 4-Yr-Olds p*	*4-Yr-Olds 5-Yr-Olds p*
Verbal Affection	Boys	.001 *3-yr-olds*	.05 *4-yr-olds*	
	Girls	.01 *3-yr-olds*		
Physical Affection	Boys			
	Girls			
Total Affection	Boys	.01 *3-yr-olds*		
	Girls			
Verbal Aggression	Boys			
	Girls	.01 *3-yr-olds*		
Physical Aggression	Boys			
	Girls			.05 *4-yr-olds*
Total Aggression	Boys			
	Girls	.05 *3-yr-olds*		

* Direction of the difference is indicated by the age level appearing at the right of the confidence levels.

The general findings that aggression tends to increase with age from two years through four years, and that boys tend to respond more aggressively than girls, are consistent with reports by Beaver (2), Caille (3), Dawe (4), Green (5, 6), Hattwick (7), Jersild and Markey (8), Murphy, Murphy and Newcomb (11), and Muste and Sharp (12). The findings that girls were more affectionate than were the boys are consistent with those of Koch (9), and the relatively low incidence of aggression in relation to the non-aggressive behaviors studied is consistent with the results of Moustakas and Shalock (10).

TABLE 5

MEAN NUMBER OF AFFECTIONAL AND AGGRESSIVE INITIATIONS

Age (years)	*Initiator*	RECIPIENTS OF AFFECTIONAL INITIATIONS *Boys*	*Girls*	*Adults*	*Total*	RECIPIENTS OF AGGRESSIVE INITIATIONS *Boys*	*Girls*	*Adults*	*Total*
2	Boys	2.5	.8	4.1	7.4	1.5	.8	.3	2.6
	Girls	.9	2.5	4.9	8.3	.2	.9	.1	1.2
3	Boys	6.5	2.5	5.0	14.0	2.0	1.0	.7	3.7
	Girls	4.1	4.2	6.4	14.7	1.1	1.1	.6	2.8
4	Boys	6.9	3.9	6.1	16.9	2.6	.7	.6	3.9
	Girls	3.6	4.2	3.6	11.4	1.9	1.3	.6	3.8
5	Boys	5.2	3.5	8.4	17.1	2.1	1.3	.8	4.2
	Girls	3.2	5.1	8.4	16.7	1.4	1.0	.6	3.0

Frequency of Affectional and Aggressive Initiations

The average frequencies of affectional and aggressive initiations are presented in Table 5. The data reveal that in initiating contacts the children employ affection much more frequently than aggression.

In answer to the question, "Did the boys initiate more affectional and aggressive contacts than the girls?" data presented in Table 6 indicate that at the two-year level the boys initiated significantly more affectional contacts with boys than did girls, while the girls initiated significantly more affectional contacts with girls than did the boys at this age level. At the three- and four-year levels the boys initiated significantly more affectional contacts with the boys than did the girls. At the two-year level the boys initiated significantly more aggressive contacts with boys than did the girls. The other differences obtained were not statistically significant.

An inspection of the data presented in Table 7 indicates that the initiations of the boys and girls were predominantly affectional in nature. In five

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TABLE 6

SIGNIFICANCE OF DIFFERENCES BETWEEN BOYS AND GIRLS IN MEAN NUMBER OF AFFECTIONAL AND AGGRESSIVE INITIATIONS*

Age (years)	*Recipients*	AFFECTIONAL INITIATIONS *Boys — Girls* *p*	AGGRESSIVE INITIATIONS *Boys — Girls* *p*
2	Boys	.05 *B*	.001 *B*
	Girls	.05 *G*	
	Adults		
3	Boys	.05 *B*	
	Girls		
	Adults		
4	Boys	.05 *B*	
	Girls		
	Adults		
5	Boys		
	Girls		
	Adults		

* Direction of the difference is indicated by the symbol appearing at the right of the confidence levels. *B* = boys; *G* = girls.

TABLE 7

SIGNIFICANCE OF DIFFERENCES WITHIN AGE GROUPS BETWEEN MEAN NUMBER OF AFFECTIONAL AND AGGRESSIVE INITIATIONS*

Age (years)	*Recipient*	INITIATIONS OF BOYS *Affectional — Aggressive* *p*	INITIATIONS OF GIRLS *Affectional — Aggressive* *p*
2	Boys		
	Girls		.05 *Af*
	Adults	.01 *Af*	.001 *Af*
3	Boys	.001 *Af*	.01 *Af*
	Girls	.05 *Af*	.05 *Af*
	Adults	.001 *Af*	.001 *Af*
4	Boys	.001 *Af*	
	Girls	.001 *Af*	.001 *Af*
	Adults	.001 *Af*	.001 *Af*
5	Boys	.001 *Af*	
	Girls	.01 *Af*	.001 *Af*
	Adults	.001 *Af*	.001 *Af*

* Direction of the difference is indicated by the symbol appearing at the right of the confidence levels. *Af* = affectional initiations.

instances the differences obtained were not statistically significant. In four of these, however, more affectional than aggressive initiations were apparent, and in one there was no difference in frequency of initiations.

The levels of significance of the differences between age groups in mean number of affectional and aggressive initiations are presented in Table 8. A significantly greater number of affectional contacts was initiated with boys by three-year-old boys than by two-year-old boys. Too, a greater number of affectional contacts was initiated with girls by three-year-old boys than by two-year-old boys. None of the differences between three- and four-year-old boys or between four- and five-year-old boys in mean number of affectional initiations was statistically significant. The three-year-old girls, on the other hand, initiated more affectional contacts with boys than did the two- or four-year-old girls, while the three-year-old girls initiated more affectional contacts with adults than did the four-year-old girls.

TABLE 8

SIGNIFICANCE OF DIFFERENCES BETWEEN AGE GROUPS IN MEAN NUMBER OF AFFECTIONAL AND AGGRESSIVE INITIATIONS*

Initiators	*Recipients*	*2-Yr-Olds 3-Yr-Olds* p	*3-Yr-Olds 4-Yr-Olds* p	*4-Yr-Olds 5-Yr-Olds* p
		AFFECTIONAL INITIATIONS		
Boys	Boys	.001 *3-yr-olds*		
	Girls	.05 *3-yr-olds*		
	Adults			
Girls	Boys	.01 *3-yr-olds*	.01 *3-yr-olds*	
	Girls			
	Adults			
		AGGRESSIVE INITIATIONS		
Boys	Boys			
	Girls			.01 *5-yr-olds*
	Adults			
Girls	Boys	.05 *3-yr-olds*		
	Girls			
	Adults			

* Direction of the difference is indicated by the age level appearing at the right of the confidence levels.

A significantly greater number of aggressive initiations were made by five-year-old boys than by four-year-old boys and girls, and a significantly greater number of aggressive initiations were made by three-year-old girls than by two-year-old girls with boys. For the most part, however, the differences between age groups in terms of mean number of aggressive initiations were not significant.

Recipients of Affectional and Aggressive Initiations

In answer to the question, "Who were the recipients of the affectional and aggressive initiations of the children?" data presented in Table 9 indicate that a significantly greater number of boys than girls were the recipients of affectional contacts initiated by two-year-old boys. Similarly, a significantly greater number of girls than boys were the recipients of affectional contacts initiated by two-year-old girls. Adults more often than boys were the recipients of affectional initiations of two-year-old girls, and they were also more often than girls the recipients of affectional initiations of two-year-old boys.

TABLE 9

SIGNIFICANCE OF DIFFERENCES BETWEEN THE MEAN NUMBER OF BOYS, GIRLS, AND ADULTS WHO WERE THE RECIPIENTS OF AFFECTIONAL AND AGGRESSIVE INITIATIONS*

INITIATORS *Age* (years)	*Sex*	RECIPIENTS *Boys — Girls* *p*	 *Boys — Adults* *p*	 *Girls — Adults* *p*
		AFFECTIONAL CONTACTS		
2	Boys	.05 *B*		.01 *A*
2	Girls	.05 *G*	.001 *A*	
3	Boys	.001 *B*		.01 *A*
3	Girls			
4	Boys	.05 *B*		
4	Girls		.01 *B*	.01 *A*
5	Boys	.05 *B*	.01 *A*	.001 *A*
5	Girls	.05 *G*	.01 *A*	.05 *A*
		AGGRESSIVE CONTACTS		
2	Boys		.05 *B*	
2	Girls			
3	Boys	.05 *B*	.01 *B*	
3	Girls			
4	Boys	.001 *B*	.01 *B*	
4	Girls		.05 *B*	
5	Boys		.05 *B*	
5	Girls			

* Direction of the difference is indicated by the symbol appearing at the right of the confidence levels. *B* = boys; *G* = girls; *A* = adults.

At the three-year level only two significant differences were apparent. Boys and adults more often than girls were the recipients of affectional contacts initiated by three-year-old boys. Boys more often than girls were the recipients of affectional contacts initiated by four-year-old boys. Similarly, boys more often than adults were the recipients of affectional contacts initiated by four-year-old girls. Adults more often than girls were the recipients of affectional contacts initiated by four-year-old girls.

At the five-year level a more consistent pattern appears. Boys more often than girls were the recipients of affectional contacts initiated by five-year-old boys, and girls more often than boys were the recipients of affectional contacts initiated by five-year-old girls. Adults more often than boys and girls were the recipients of affectional contacts initiated by five-year-old boys and girls.

The data in Table 9 also indicate that in every instance where the difference was significant, boys more often than girls and adults were the recipients of aggressive initiations. Boys more often than girls were the recipients of aggressive contacts initiated by three- and four-year-old boys, and boys more often than adults were the recipients of aggressive contacts initiated by four-year-old girls.

SUMMARY

The study is concerned with the frequency with which preschool children manifest affection and aggression, the frequency with which preschool children initiate affectional and aggressive contacts, and the individuals chosen as the recipients of the contacts. Inasmuch as all of the observations were made in demonstration laboratories at Oklahoma A. and M. College, the data must necessarily be viewed as reflecting the school behavior of the subjects investigated.

The data analyzed consist of 4,960 one-minute ratings of 69 males and 55 females, 40 observations having been made on each child.

The major findings are as follows:

1. At the three-, four-, and five-year levels the children were more verbally than physically affectionate. At the two-year level the difference was not statistically significant.

2. Generally, there was little difference in the frequency with which physical and verbal aggression was evidenced.

3. Aggression tended to increase with age from two years through four years of age, and boys were more aggressive than girls.

4. At all age levels the children were more affectionate than aggressive in their response to others and more frequently employed affection than aggression in initiating contacts.

5. At the two-, three-, and four-year levels the boys initiated significantly more affectional contacts with boys than did the girls, while the two-year-old girls initiated significantly more affectional contacts with the girls than did the boys.

6. There was a tendency for the boys to choose boys or adults rather than girls as recipients of their affectional contacts.

7. The boys were more likely to choose boys rather than adults as recipients of their aggressive initiations.

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THE RELATIONSHIP BETWEEN "INTOLERANCE OF AMBIGUITY," GENERALIZATION AND SPEED OF PERCEPTUAL CLOSURE

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The concept of "intolerance of ambiguity" was introduced by Frenkel-Brunswick as a unifying term for a number of response characteristics of prejudiced individuals. Some of the subjects in a study of social attitudes (10) were observed to be unable to accept ambivalent feelings toward their parents or other individuals. From a series of related experiments (10) it was concluded that . . . "denial of emotional ambivalence and intolerance of cognitive ambiguity (are) but different aspects of what may be a fairly coherent characteristic. An underlying emotional conflict between glorification and hostility in the attitude toward parents, sex and one's social identity . . . is related . . . to a prevalence of premature reduction of ambiguous cognitive patterns to certainty in these subjects" (10, p. 140). A number of investigations (1, 5, 11, 14, 16) of the response characteristics of ethnocentric as compared to nonethnocentric individuals lend some support to this notion.

Theoretically, intolerance of ambiguity arises from the emotional conflicts and intensity of anxiety experienced during the socialization process. Although there is little direct evidence to support this assumption, recent investigations (18, 19) concerned with the relationship between experimentally aroused anxiety and behavioral phenomena generally associated with "intolerance of ambiguity" have provided confirmatory evidence. One experiment (19) was concerned with the consequences of stress under conditions which might be termed "psychological ambiguity"; that is, the test stimuli deviated widely from the learned expectancies of the individuals. *Ss* were presented with incongruous stimuli (e.g., half male—half female figure) at increasing levels of illumination until recognition of the total stimulus complex occurred. The hypothesis tested was that anxiety would increase the strength of basic or prevailing expectancies and *Ss* would thus require longer to recognize the incongruous stimuli. The prediction was confirmed at below the 5 per cent level of confidence. Additional support for the hypothesis was also obtained in a related study

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(18). *Ss* under conditions of stress required significantly more trials ($p < .001$) to recognize an incompleted stimulus. This could be also attributed to the tendency for prerecognition responses (expectancies) to interfere with correct recognition.

In the latter study (18) the effects of the psychological stress on behavior under conditions of stimulus ambiguity were investigated. The experimental materials consisted of five complex successive-decision-making tasks. The first card of each task contained only a few elements of a picture. Additional elements were added on successive cards until the picture was completed on card 15. *Ss* were instructed to obtain the correct response on as *few cards* as possible. The prediction that *Ss* in the stress group would make a decision as to the nature of the stimulus on card 15 relatively early in the task series was confirmed at below the 10 per cent level of confidence.

These findings lend support to the hypothesis that behavioral phenomena generally associated with "intolerance of ambiguity" (e.g., premature cognitive closure and rigidity) are a function of anxiety arousal under particular conditions of psychological and/or stimulus ambiguity. On the basis of these results one might hypothesize that "intolerance of ambiguity" arises from learning conditions during the socialization process, where anxiety arousal was consistently associated with ambiguity of the stimulus field. That is, "ambiguity" may represent a learned anxiety cue for some individuals. If such is the case, then one would expect an association between "intolerance of ambiguity" as measured by behavior in an ambiguous task-situation and other functional properties of anxiety; e.g., rigidity (5, 9) or generalization (17) and speed of perceptual closure (15, 18). This paper reports an investigation designed to explore this hypothesis. Specifically, this investigation was concerned with the relationship between performance on a complex decision-making task, response perseveration and latency of response in a simple object-recognition task.

METHOD

Subjects

The total sample consisted of 58 junior high school students (27 females, 31 males) ranging in age from 12 to 14 years.[1]

Decision Location Task[2]

The index of "intolerance of ambiguity" was one of the complex decision-making tasks which had been used in a previous investigation (1).

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[1] The author extends appreciation to the officials and junior high school students of the Tipton, Iowa, public school system for their cooperation in this study.

[2] The similarity between these tasks and the Decision Location Test (11) and the Transition tests (4, 10) should be noted. For purposes of convenience the tasks used in this study are, with Dr. Levitt's kind permission, designated Decision Location Tasks-Form S (DLT-S).

Illustrations of five such tasks are presented in that report. Each task consists of a series of 15 stimulus cards. The first card of a series has only a few elements of the stimulus picture, which, by addition of elements on successive cards, appears completed on card 15. The criterion task (A) used in this study was one in which the figure "5" appeared completed on the 15th card. A second task (B) was administered for purposes of obtaining an estimate of reliability. In this task a picture of a man with a shovel was completed on the 15th card of the series.

Experimental Tasks

A test of generalization was obtained by extending the original series of 15 cards in the decision location tasks to a total of 30 stimulus cards. The stimulus cards from 16 to 30 consisted of transitional stages of the completed stimulus on card 15 to a new stimulus on card 30. On the first task series the number 5 was successively modified until the number 9 emerged on card 30. The second series of stimuli (Task B) was extended in the same way so that the man digging (card 15) became a leafless tree on card 30. The measure of generalization was the number of stimulus cards in the series from 16 to 30 that elicited the response which had been correct for card 15 (perseverative responses).

A modified form of the Street Gestalt Closure Test (20), consisting of 27 mutilated pictures representing objects or situations considered fairly familiar to all *S*s, was used as the measure of speed of perceptual closure.

Procedure

Each *S* was first administered the two DLT-S series of 30 stimuli. Prior to the administration of these tasks, a three-card sample series was given as a demonstration task. Before each task the *S* was given a 5 by 7 inch card on which were printed four possible correct responses for that series. The *S* was permitted to look at the card for 10 seconds, then it was removed from view. The instructions to the DLT-S task were as follows:

"I am going to show you a series of cards. The first card of the series always has just a few elements of a complete design on it, but each card gives you a few additional hints or clues as to what the final design or picture is going to be. Here is a sample. . . ." (Sample series of cards shown to the *S* and fully explained; all questions answered pertaining to the cards.)

(See Footnote 3.) "Remember there is only *one* design or picture on each card; *all the details belong to a complete design which is on the final card*. Here is a list of (numbers, etc.); one of these is the correct answer, that is, is on the final card of (this) series. You have a little time (10 seconds) to look at this card."

"Now the object of the task is to see how soon you can organize the elements of a card into the correct design or picture. You may look at each

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[3] The remaining portion of the instructions was repeated for each additional series.

card as long as you wish. *Remember*, the idea is to see *how few cards* you need to look at to decide what the *correct answer* should be."[4]

(After the first response has been made): "Now tell me, *on each card*, what you think it is going to be on the final card."

The *E* recorded the trial of first response (criterion score) and all subsequent responses in the series. The degree of generalization was measured by the number of cards in the 16 to 30 series to which the correct response to card 15 was elicited.

The Street Gestalt Test was administered following the decision location tasks. Each picture was presented to the *S*s with the instructions to identify the picture. If the first response was incorrect, *S*s were instructed to respond until either the correct response occurred or until a two-minute limit was reached. The latency of all responses was recorded to the nearest 1/10 of a second.

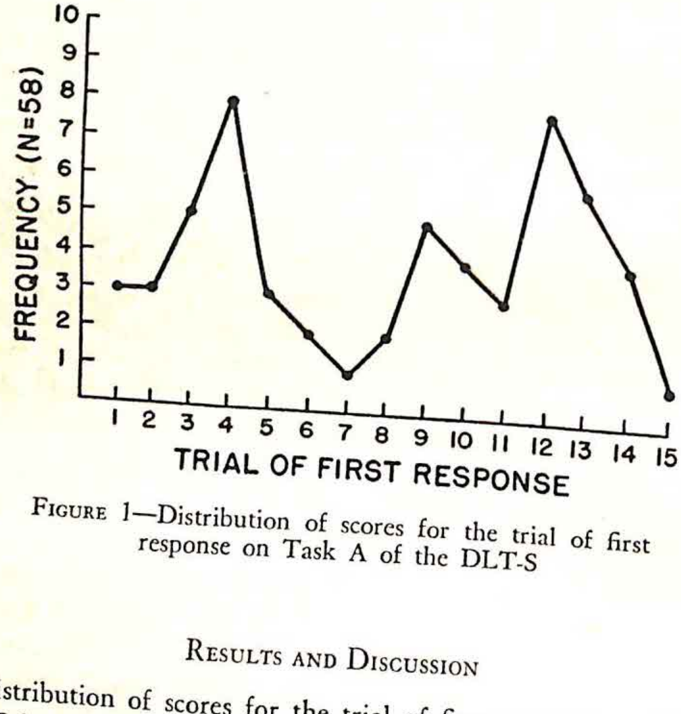

FIGURE 1—Distribution of scores for the trial of first response on Task A of the DLT-S

RESULTS AND DISCUSSION

The distribution of scores for the trial of first response on Task A of the DLT-S is presented in Figure 1.

The bimodal form of the distribution of scores leads to some difficulty in selecting proper criterion or cutting scores for assigning individuals to a high or low intolerance of ambiguity group. Other investigators using similar tasks (4, 10, 11) have assumed that individuals who are intolerant

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[4] The final sentence in these instructions is, of course, a crucial aspect of the task situation and in this case was intended to be ambiguous; i.e., both an early response (how few cards) and accuracy (correct answer) were stressed equally.

TABLE 1

COMPARISON OF THE EARLY AND LATE RESPONDERS ON THE EXPERIMENTAL MEASURES OF GENERALIZATION AND CLOSURE

Measure	ER (Trials 1–6) *Mean*	LR (Trials 12–15) *Mean*	*Diff.*	*t*	*p*
Generalization*					
Task A	1.56	1.55	.01	.10	ns
Task B	1.70	1.75	.05	.29	ns
Total (A + B)	2.11	2.10	.01	.07	ns
Speed of Closure	6.00	5.67	.33	.31	ns

* The variances of the raw scores for the measure of generalization were not homogeneous; the means and *t* tests are based on transformed data.

of ambiguity would respond relatively early in the task series. Therefore, those *S*s falling above and below the median (Mdn = 8.9) were compared on the measures of generalization and speed of closure. Comparison of these groups by means of *t* tests and a nonparametric test yielded no significant differences.

There is some question, however, whether the assumption underlying the use of this cutting score at the measure of intolerance of ambiguity is tenable for the conditions of this experiment. One might speculate that anxiety arousal under these "ambiguous" conditions would result in a tendency toward either impulsivity *or* excessive cautiousness of response (2, 18). If such were the case, the extreme responders, the very early (ER) and very late (LR), might be expected to behave similarly on the experi-

TABLE 2

COMPARISON OF THE COMBINED EARLY AND LATE RESPONDING GROUPS WITH THE MIDDLE RESPONDING GROUP ON THE EXPERIMENTAL MEASURES OF GENERALIZATION AND CLOSURE

Measure	ER+LR *Mean*	MR *Mean*	*Diff.*	*t*	*p*
Generalization*					
Task A	1.55	1.47	.08	1.54	<.20 >.10
Task B	1.73	1.59	.14	1.97	<.05 >.02
Total (A + B)	2.11	1.94	.17	2.72	<.02 >.01
Speed of Closure	5.83	10.69	4.86	4.43	<.01

* The variances of the raw scores for the measure of generalization were not homogeneous; the means and t tests are based on transformed data.

mental tasks; that is, to manifest more generalization and shorter latency on the recognition task than those individuals making an initial decision in the middle (MR) of the task series. As indicated in Table 1 and 2, the results of this regrouping are in general positive.[5]

These findings support the general line of reasoning that some individuals cannot "tolerate" the ambiguity of the stimulus field and tend to structure the stimuli prematurely (ER). The fact that the late responders (LR) behave similarly on the experimental tasks suggest that these individuals react to ambiguity, and presumably anxiety arousal, with characteristic excessive "cautiousness." Whether these individuals are also "intolerant of ambiguity" is primarily a theoretical question. That is, if "intolerance of ambiguity" refers to the tendency for ambiguity of the stimulus field to arouse anxiety, then on the basis of these results both the early and late responders might be classified as intolerant of ambiguity. In view of the *ad hoc* nature of these findings, however, considerable caution is necessary in interpreting the results. At the same time, several lines of evidence may be cited indicating anxiety is associated with the tendency to respond either early *or* late in the complex decisions task series.

First of all, of course, are the findings reported above with respect to the significant difference between the extreme responders as compared to the middle responders on the degree of generalization and speed of closure. Secondly, it was pointed out in the previous study (18) that without reinforcement of a particular response set (e.g., instructions to obtain the correct answer *as soon as possible*) as was the case in that study, anxiety arousal might be expected to result in either a relatively early or relatively late overt (verbal) response in the task series. This assumption was tentatively supported by the data obtained in that study. The stress group was significantly more variable ($p = .05$) on the first task series and further showed a statistically significant increase ($p < .01$) in the trial of first response from task 1 to task 2.

The possibility that response suppression (i.e., accuracy set) operates to delay initial decisions is also suggested by data from this study. The mean trial of correct response was 11.19. Of the 19 *S*s who did not make the initial response until trial 12 or later, only 3 made an incorrect initial decision. Data to be presented in a later section of this paper indicate the relatively delayed first response was not a function of intelligence.

There is also tentative evidence that anxiety level is associated with the tendency to respond either relatively early or late in the task series. In the course of an investigation concerned with the relationship between some indices of anxiety in children, most of the subjects in this sample were administered the children's anxiety scale (6). The mean anxiety scores for the respective groups were as follows: ER, 18.89; LR, 17.81; MR, 15.03.

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[5] To simplify computational procedures one *S* was randomly withdrawn from the MR group.

Comparison of the differences between these means yielded near significant t ratios for the comparison of the ER and MR groups ($t = 1.83$; $df = 35$; $.10 > p > .05$) and the LR and MR groups ($t = 1.59$; $df = 32$; $.20 > p > .10$).[6] Therefore, it would seem plausible to assume that characteristic reactions to anxiety (e.g. impulsivity and cautiousness) evoked by the ambiguity of the stimulus field are important determiners of performance on the decision location tasks.

The fact that performance on these tasks is sensitive to "set" factors (18), however, indicates that relatively early and late decisions may be a joint function of anxiety level and "set" (7) rather than the tendency for stimulus ambiguity to arouse anxiety in those individuals who fall in the extreme groups. A replication of this experiment, with both individually- and group-administered tests, with a preselected sample of high and low anxiety subjects is now being conducted. The additional data should provide more definite answers to the questions posed above.

Reliability of the DLT-S Task

The reliability of the DLT-S as an index of the tendency for ambiguous situations to arouse anxiety is difficult to determine since the usual methods of obtaining reliability do not apply strictly. The best estimate would seem to be derived from the correlation between alternate forms of the task. However, the two tasks used in this study have not been demonstrated to be equated along relevant dimensions. Further, it is known that performance on the second task is partly determined by the *S*'s performance on the first task (11, 18). Therefore, the correlations reported should be considered only crude estimates of the task's reliability.

The correlation between Task 1 and Task 2 for the control group ($N = 40$) in the original experiment (18) was $+.38$.[7] The same correlation for the total sample in this study ($N = 58$) was $+.59$. Levitt (11) obtained a correlation of $+.66$ for the two forms of the DLT test used in that investigation. The latter correlations are all statistically significant beyond the .01 level of confidence. Although the relationships are not as high as might be desired, considering the nature of the task, they are high enough to warrant further investigations with the tasks.

Intelligence and Performance on the Criterion and Experimental Tasks

California Test of Mental Maturity (CTMM) scores were available for all *S*s participating in this study. The total group obtained a mean IQ of 104.63 with a standard deviation of 17.96. The means for the HIA-E, HIA-L, and LIA groups were 104.00, 103.95, and 105.95 respectively. None of the differences between the groups was significant.

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[6] The distribution of CAS scores for the 7th graders was comparable to that obtained with the standardization group (6). Since most of the *Ss* in this sample scored in the middle range of that distribution, it might be expected that preselecting *S*s from the extremes would result in higher relationships between anxiety level and performance on the DLT-S.

[7] This correlation is considerably attenuated since it is based on data obtained on five different tasks appearing randomly in the first and second positions.

Product-moment correlation coefficients were computed between CTMM scores and performance scores on the criterion and experimental tasks in order to determine to what extent the obtained results might be attributed to intelligence. The CTMM correlated −.03 with the trial of first response and +.39 with the trial of correct response on the DLT-S. The obtained correlations between the CTMM and response perseveration and latency were +.02 and −.10 respectively. The only statistically significant correlation was that between the measure of intelligence and the trial of correct response (+.39) which is significant beyond the 1 per cent level of confidence. These data indicate that the relationships obtained between the DLT-S and measures of generalization and speed of closure cannot be attributed to intelligence.

CONCLUSIONS

The findings of this study are, of course, based on a relatively small number of subjects. Considerably more information concerning the determinants and correlates of performance on the decision location task will be necessary before definite conclusions may be drawn. Within these limitations, however, it would seem warranted to state the following general and tentative conclusions.

The finding that "early" and "late" responders on the decision location task behave similarly with respect to the measures of generalization and speed of closure is consistent with the hypothesis that anxiety is one determinant of the behavioral correlates of "intolerance of ambiguity." By indirection, the results also suggest that anxiety arousal may, for some individuals, be a concomitant of "ambiguity" in the stimulus field (8, 12).

Whether the performance of the early and late deciders was some function of the relationship between anxiety and set (instructions) or due to characteristic reactions to anxiety arousal in ambiguous situations (3, 5, 8) is a question only further research can answer. However, the results reported here, as well as recent investigations concerned with the effect of characteristic reactions to anxiety on learning (13) and behavior in "ambiguous situations" (2, 3, 8, 12), would seem to make the latter interpretation a plausible one. Block and Peterson (2), for example, in a study of some of the personality correlates of decision time, report stable adjudged trait differences between "fast" and "slow" deciders along several selected personality dimensions. Further research should reveal whether characteristic early and late decision-making on these more complex tasks is related to such personality dimensions as impulsivity-compulsivity, confidence, assertiveness, etc. Particularly important also is a better understanding of the learning conditions during the socialization process which contribute to the development of particular characteristic reactions to anxiety.

SUMMARY

A sample of 58 junior high school students were individually administered a decision location task, a measure of response perseveration and a recognition test for mutilated pictures (closure). Individuals who tended to make initial decisions relatively early or relatively late were compared with those who made these decisions nearer the mean trial of initial decision for the total sample. Analysis of these data yielded no statistically significant difference between the "early" and "late" responders on the degree of response perseveration or latency of response on an object recognition task. These two groups were then compared with the group which tended to make initial decisions in the middle portion of the task series. Analysis of the data indicated that both the early and late responders manifested significantly more response perseveration and shorter latency of response on the recognition task than the middle group. The magnitude of the correlations between intelligence test scores and the experimental measures indicated these results could not be attributed to intelligence. The findings were interpreted as lending additional support to the hypothesis that anxiey is an important determinant on "intolerance of ambiguity."

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CHILD BEHAVIOR AND THE EMPATHIC COMPLEX

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This article seeks to propose, within the necessary spatial limitations, a concept for use in the study of child behavior, and some comments concerning its application.

THE CONCEPT DEFINED

The concept is that of the empathic complex. Its central core is the term *empathy*, the dictionary definition of which is "the ascription of our emotional feelings to the external object which serves as their visual and auditory stimulus" (Funk and Wagnalls, 1951). It was the late Harry Stack Sullivan who sparked the term into use in connection with the study of human behavior. "Empathy," he wrote, "is the term that we use to refer to the peculiar emotional linkage that subtends the relationship of the infant with other significant people" (10, p. 8) [Consult also (11) and (5).] The term *complex* is used to convey the idea of a system or assemblage of particulars like, for example, the B complex in vitamins. We are using the term *empathic complex*, then, to mean the particular emotional linkage between a child and the significant persons in his environment.

Sullivan primarily utilized the term *empathy* in connection with the subtle process whereby certain emotional states, like anxiety, are transferred from mother to infant, but he did recognize that as the child grew older he came to perceive through this same emotional linkage more overt manifestations in regard to behavior. In fact, he sensed the role of this emotional linkage throughout the life of the individual. "We do not know much about the fate of empathy," he wrote, "in the developmental history of people in general. There are indications that it endures throughout life, at least in some people" (10, p. 8).

The concept of the empathic complex is presented here as applying particularly to the years from early childhood to adolescence, after which the pulls of the child's peers manifest themselves with relative strength.

THE THEORY OF THE EMPATHIC COMPLEX

Our theory of the empathic complex will be presented briefly in three parts.

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1. As the child grows out of infancy and his more or less exclusive contact with the mother, he develops close relations with a selected few older persons. Some of these are members of his immediate family; some, of his kinship group; still others are selected from family contacts, such as guests, servants, and the like. Data presented later in this article suggest the possible number and range of such persons.

2. These persons are selected by the child, within the limitations that his situation imposes. In doing so, he considers primarily the total personality of these "other persons," and only secondarily the details of his relations with them, i.e., their methods of child rearing. Behrens (1), in a highly significant study, has shown this in the case of the mother. "The study indicates that evaluations of child rearing practices are of little value unless understood as aspects of a dynamic process of socialization dependent on the social interaction of those individuals concerned" (p. 225). The results of this study show that "the child's adjustment to socialization was significantly related to the 'total mother person' and specifically to her character structure, but insignificantly related to the mother's specific rearing techniques" (p. 237).

In selecting "total persons," the child does so on the basis of his needs of them, and not as they are viewed by other persons. For example, a quiet, serious, hard-working father, whom adults characterized as a good father, a good husband, and a good provider, appeared to the child as a cold and forbidding total person. In another case, an impressive-looking, vigorous lawyer, coming to the home to visit, impresses a lonely, day-dreaming boy with the way other persons kow-tow to him.[1]

Above all, and pervading all, influencing the child's selection is the emotional rapport which develops between him and these "other persons." And this, be it emphasized, is a two-way relationship. Children, because of their dependence, want to be loved, to be recognized for themselves, but they also want to love in return. Years ago, Charles Dickens expressed this latter factor, so often overlooked, we believe, in contemporary studies. In *Great Expectations,* Pip, who had been reared by Mr. and Mrs. Joe, has just been freed of the guilt for having stolen Mrs. Joe's pie. "I do not recall," he says, "that I felt any tenderness of conscience in reference to Mrs. Joe. But I loved Joe—perhaps for no better reason in those early days than because the dear fellow let me love him" (6).[2]

3. These "other persons," or empathic complex, become the primary factors in the child's behavioral development, and for three main reasons.

(a) They serve as the polar points around which the details of child rearing are organized. The theory of the empathic complex is not meant to ignore or to depreciate the constant repetitive processes that go on in the child's life, the multitude of continuing details of family life and habits of child rearing, but to add to their consideration the idea that there are polar points, highly magnetized as it were, around which they tend to swirl and become organized.

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[1] From the files of the William T. Carter Foundation.

[2] See introductory statement by Earle Davis, p. iv.

(b) They become the motivating forces which strengthen or weaken the methods of child rearing. The child decides that he wants to be like one or more of these other persons, and, to become so, will respond cooperatively to certain aspects of his rearing. Or, he will think, as a young person said to us recently, "the key to my behavior is the strong desire not to be like my older sister."

(c) They serve as the mediating agents between the child and his environment. Zimmerman and Broderick (13) have shown how family friends serve this purpose with families as a whole. Our theory contends that a similar function is served by his empathic complex for the child. [For a general discussion of the role of the home as an experience defining and evaluating agency, see Bossard (2, p. 433).]

It should be made very clear that the thesis advanced in this article is supplementary and not opposed to the cultural study of patterns of child rearing and development. Each culture and subculture has its distinctive modes of child rearing and personality formation. Our thesis suggests that, within the cultural configuration of the area and the family, it is the empathic complex which accounts for the selective aspects of the individual child's behavioral development, thus explaining the wide variations that obtain within a seemingly common background. Simply stated, what we are proposing for the study of behavior is that it is people, and not methods of child rearing, that are significant in explaining the differentials within a culture or subculture. It is on this basis, too, that the negative findings of Sewell and his associates may be explained (7, 8, 9).

Some Suggestive Lines of Evidence

In support of the thesis which we have advanced, we submit four lines of evidence, selected from our studies in the sociology of child behavior.

1. *Autobiographical material.* In the analysis of autobiographies, which we have used extensively in our work (2, Chapters XI, XII, and XIV; 3; 4), we have found that almost without exception the authors explain their own development in terms of a relatively few persons toward whom they developed marked feelings of like or dislike when quite young. The number of such persons usually is limited, ranging from two to perhaps as many as seven. As a recent example of such writing by a distinguished author, there is the analysis made by Arnold Toynbee (12), the historian. He identifies the following major influences in his early formative years: (a) mother, (b) great uncle, (c) uncle, (d) a tutor, and (e) selected books, chiefly of a historical nature.

2. In a collection of three hundred life-history documents which we are preparing for publication, we find, virtually without exception, that in

writing of the factors believed to influence the behavior of the writers the references are to a selected few persons, and that the clearest and fullest descriptions are in terms of the personalities and values of these persons. It is also evident, in this material, that the writers have strong emotional attitudes toward these persons, either of appreciation or of aversion, so that the persons referred to, and their character structures, stand out as vivid impressions in their experience history.

3. In one of the tests of our theory, we sought to ascertain how many such persons were confined to the family group of a given number of persons. Accordingly, we asked a total of 150 persons to (a) list all persons in their immediate family, (b) all persons in their paternal kinsfolk's group, (c) all persons in the maternal kinsfolk's group, and (d) to indicate all those with whom they had close emotional ties (those they liked very much), those toward whom they had opposite feelings (disliked very much), and those toward whom they had neutral feelings. Sixty of these were undergraduate students in a large eastern university, and 90 were members of an evening adult education group. Table 1 represents the answers in summary form.

TABLE 1

EMPATHIC COMPLEX DATA

150 Cases — 41 Males, 109 Females

Immediate Family	*Males* (41)		*Females* (109)		*Total*	*Per Cent*
Total Im. Contact	*154*	*100.0*	*499*	*100.0*	*653*	*100.0*
Close	109	70.8	401	80.4	510	78.1
Not	28	18.2	51	10.2	79	12.1
Neutral	17	11.0	47	9.4	64	9.8
Total Paternal Kinsfolk	*442*	*100.0*	*899*	*100.0*	*1341*	*100.0*
Close	195	44.1	379	42.2	574	42.8
Not	43	9.7	92	10.2	135	10.1
Neutral	204	46.1	428	47.6	632	47.1
Total Maternal	*408*	*100.0*	*1045*	*100.0*	*1453*	*100.0*
Close	157	38.5	403	38.6	560	38.5
Not	52	12.7	123	11.8	175	12.0
Neutral	199	48.8	519	49.6	718	49.4

It will be noted that the average number of persons in the immediate background that elicited positive (not neutral) responses was approximately four per person; of the paternal kinsfolk it was about the same, and only fractionally higher for the maternal kinsfolk group. Clearly, the emotional responses to the members of the family group are limited in number and highly selective.

In our detailed analysis of this material, there are some marked variations on the basis of the size of the several family units, the physical nearness to one or both kinship groups, and relationships between groups on the basis of past history. On the whole, however, most replies fell within a range of three to five persons in each of the three groups, including both those actively liked or disliked.

4. Another experimental study made with 38 advanced university students in the field of human behavior is presented in summary form. They were asked: (1) to identify the chief influences which conditioned their own behavior up to the fifteenth year; (2) if these were persons, to write out brief characterizations of such persons. Care was taken to explain that attitudes of hate or aversion might be significant, as well as love, admiration, or respect. Finally, thumb-nail characterizations of the 38 persons who contributed such information were obtained.

The number of cases is, of course, too small to have anything but suggestive value. It is with this acknowledgment that selected aspects of this material are presented.

1. The influences identified by all 38 cases center around persons: persons they liked and persons they disliked.
2. It is equally clear that all had pronounced emotional attitudes toward these persons.
3. The number of such persons identified ranged from three to eight. The most frequent numbers were five (eight cases) and six (eighteen cases).
4. The person mentioned most frequently was the mother, also the most emphasized. Father and other sibling followed in that order.
5. Kinsfolk mentioned, in order of frequency, are aunts (usually maternal aunts), grandparents, uncles, sister-in-law.
6. Other persons, in order of frequency, were nurse (governess, Negro mammy), teacher (in kindergarten or primary grades), guest, neighborhood personage.

Finally, we compared the characterizations of the influencing persons, as given by those cooperating in the study, with the thumb-nail characterizations given to us of those cooperating. The results here are striking. In 34 out of 38 cases, the sketches of those cooperating identified, wholly or largely, the traits and values mentioned by the cooperators, as existing in the persons whom they mentioned as major influences in their lives. Our studies here are too limited in number and, as yet, not developed sufficiently in method, to merit more than mention as an area for future investigation.

In summary, each of these studies, however limited in number of cases and superficial in character, suggests that adults who analyze the outstanding influences in their earlier behavioral development emphasize a selected few persons whom they contacted in those early years: toward whom they developed strong emotional attitudes; who came to personify certain traits, values, habits, occupations, and behavior patterns; and whom they more or less consciously sought to emulate or, in the case of feelings of aversion, develop opposing traits, etc. On the basis of these contacts, the boy or girl reacts toward the methods of child rearing that constitute his or her experience, and evaluates other conditioning factors encountered.

SUMMARY

This paper is presented purely for suggestive purposes. It is our hope that other students, especially of the sociology of child behavior, will test our concept of the empathic complex and the role of the outstanding emotionalized contacts of the child as the polar points and motive forces in the development of the child's behavior.

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TEN-YEAR-OLD BOYS IN TROUBLE

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This study is an effort to trace further the influence of developmental stage on delinquency. Although there may be no sharp division based on age, nevertheless, many writers on the subject state that concurrent with pubescence most youngsters begin to show behavior patterns different from those of any earlier age. To this circumpubescent period has been given the name "preadolescence."

In their compilation of the rather small amount of research evidence on this period, Blair and Burton (1) agree with Redl (3) that, as compared with younger children, the preadolescents display more ambivalence toward their parents, more readiness to be resistant to adults, and a more intense devotion to peer groups. Looking at the matter from the opposite viewpoint, boys below the age of pubescent changes should show a greater dependence upon their parents, a greater docility toward adults, and weak ties to peer groups.

According to the findings of the Harvard Growth Study (2), pubescence is rare among ten-year-old boys. Indeed, in their sample of 747 public school boys, none had completed his preadolescent growth spurt before 11.5 years of age. This would indicate that very few would have entered that growth period at the age of ten. Therefore, a group composed of ten-year-old boys would be heavily saturated with "children" as opposed to "preadolescents" and "adolescents."

If one were to accept Redl's formulation of the characteristics of preadolescents, a group of "children" boys would show less open ambivalence to their parents, because of less open rebellion, than would be true of older boys. They would also show a weaker set of ties to the peer group, which would loom less importantly in their lives.

In a previous study by Wattenberg and Quiroz (6) it had been noted that among ten-year-olds who were contacted on complaint by the Youth Bureau of the Detroit Police Department few continued in patterns of delinquency. Of a total of 207 ten-year-olds with police records in 1948, a follow-up found only 43 had police contacts in 1950. This could be taken to indicate that their original offenses were of a nonprognostic, episodic nature rather than expressions of markedly deviant personality structures.

On the assumption that a group of ten-year-olds would show more "childish" characteristics it seemed worth while to test the hypothesis that even among boys with police records ten-year-olds would differ from older lads in expressing less antagonism to parents and having less sturdy relationships with their peers.

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PROCEDURE

As part of its procedure in dealing with boys charged with offenses, the Youth Bureau of the Detroit Police Department requires its officers to fill out a "history sheet," recording a wide variety of information on each boy contacted on complaint. In a series of studies it had been found that this information had predictive value.

The "history sheets" for the group of ten-year-olds used in the Wattenberg and Quiroz study (6) previously mentioned were obtained. The sheets for all older boys picked up by the police in that same year were used as a comparison. In all, there were 207 ten-year-olds and 3,663 older boys. For each item appearing on the history sheets, a tabulation was prepared and tested for statistical significance of differences by the chi square test.

FINDINGS

Of the 46 tabulations tested, the null hypothesis could be rejected at the .01 level of confidence in 14; and at the .05 level of confidence in three more. The total number at the .01 level was 14 times chance expectation; at the .05 level 7.4 times. There is clearly a series of real differences between the ten-year-olds and all older boys. Table 1 sets forth these differences.

TABLE 1

DIFFERENCES BETWEEN TEN-YEAR-OLDS AND ALL OLDER BOYS INTERVIEWED ON COMPLAINT BY DETROIT POLICE, 1948

Subject of Tabulation	*Category in Which Ten-Year-Olds Were High*	*Level of Confidence*
Physical development	"Small for age"	.01
Sexual development	Preadolescent	.01
Favorite sport	Baseball	.01
Attitude toward school	Likes	.01
Attitude toward teacher	Friendly	.01
Attitude toward classmates	Quarrels	.01
Grades in school	Average	.01
Paid employment	None	.01
Disposition of money	For entertainment	.01
Place of employment	Not employed	.01
Attitude toward neighbors	Spiteful	.01
Size of home	Less than one-third room per person	.01
Racial composition of neighborhood	Racially same	.05
Parents' income	Regular, but low	.02
Marital status of parents	Home intact	.02
The family car	Boy not allowed to drive	.01
Money from parents	Given on request or as allowance	.01

It will be noted immediately that several of the statistically significant differences are of a nature that would be expected as a matter of course in any comparison of ten-year-olds with other boys. These include: sexual development, paid employment, place of employment, and use of the family car.

Pointing to more basic life situations or personality attributes are such differences as the indications that the ten-year-olds are more dependent upon their parents for money, the evidences of relative poverty, and the pattern of attitudes toward school and adult neighbors.

The attitudes toward school would appear to confirm the hypothesis which this study was made to test. The ten-year-olds express favorable attitudes toward school and teachers. There is no way of knowing whether this expression represents a genuine attitude or is mere lip-service. However, more of them quarrel with classmates. Also tending to confirm the hypothesis is the fact that, although differences failed to reach statistically conclusive levels, somewhat more ten-year-olds expressed liking for their homes and for both parents; fewer belonged to organized youth groups or to either gangs or other strong peer groups.

The significance of the greater spitefulness against adult neighbors is not clear. It could be that neighborhood feuds were responsible for bringing the police into the picture for these boys. It is also possible that the adult neighbors were targets for hostility displaced from the yet hard-to-challenge parents or teachers. All this, however, is sheer speculation. The facts needed to give clear meaning are not available.

The relative poverty of these boys as compared to older ones points to possible exposure to more examples of delinquency in older peer groups present in their neighborhoods. Generally speaking, in larger cities low income and overcrowded housing are found in areas where delinquency rates are high.

An unanticipated finding was the one indicating that homes were more likely to be intact for the ten-year-olds. Linked to this on the basis of a previous study (5) is the tendency for these boys to come from racially homogeneous areas. It has been noted that residence in racially mixed neighborhoods predicted repeating among boys who got in trouble although not members of gangs and who come from tense homes.

DISCUSSION

It is interesting to compare the results of this study with those of a previous study (4) in which eleven-year-old boys in trouble with the police were compared with all older boys in the same situation. The findings of both studies agree in finding the younger group more frequently falling in the following categories:

1. Small for age
2. Preadolescent
3. Likes school
4. Friendly to teachers
5. No paid employment
6. Spends money on entertainment

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No

7. High ratio of people to rooms in dwelling unit
8. Home intact
9. Money given by parents as allowance or on request
10. Baseball as favorite sport
11. Does not drive the family car.

The ten-year-olds were different in that, as compared to older boys, they were more likely than eleven-year-olds to quarrel with classmates, get average grades in school, display a spiteful attitude toward adult neighbors, live in racially homogeneous neighborhoods and come from homes where the parental income was regular but low.

The eleven-year-olds, on the other hand, as compared with older boys were more likely to live in substandard dwellings, have working mothers, express hostile feelings against one or both parents, belong to a gang, and have fewer quarrels with classmates.

To the extent that these comparisons bear upon the hypothesis, they tend to support it. As compared to a group more highly saturated with "preadolescents" as distinguished from "children," fewer ten-year-olds expressed hostility to parents or gave evidence of strong peer group ties; fewer of them were in gangs and more quarreled with classmates.

SUMMARY

A comparison was made of data relating to 207 ten-year-olds and 3,663 older boys interviewed on complaint by the Youth Bureau of the Detroit Police Department. As contrasted with comparisons of similar nature involving groups having more "preadolescents" this one indicated that fewer ten-year-olds expressed hostility to parents and had strong peer group ties.

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PATTERNS OF REINFORCEMENT AND RESISTANCE TO EXTINCTION IN YOUNG CHILDREN[1]

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Intermittant reinforcement, varying patterns of reinforcement during training, has been the concern of many experimental studies with animals since the results are said to have bearing on significant theoretical issues in behavior theory (14). Aside from theoretical considerations, cumulated data indicate that within limits, types of training schedule is one of the conditions covarying with resistance to extinction, i.e., the number of responses emitted during a period of nonreinforcement. More specifically, results have established, for the most part, that intermittent reinforcement (whether fixed or irregular in pattern) markedly increases resistance to extinction as compared to continuous reinforcement (2, 10, 11). Our interest, at this stage of laboratory research on child behavior, is to study this relationship in young children.

In discussing this and related studies, it may be helpful to offer at the outset some clarification of the terms most frequently employed in investigations of this sort. Our definitions are similar to Skinner's (17, 18).

1. By *continuous reinforcement* we mean that in the experimentally defined situation a response has been reinforced on each occasion of its occurrence.
2. By *intermittent reinforcement* we mean that a reinforced occurrence of a response has been preceded or succeeded on at least one occasion by an unreinforced occurrence of the response. No differentiation is made among the terms descriptive of this procedure; namely, intermittent reinforcement, partial reinforcement and periodic reconditioning.
3. By *interval intermittent reinforcement* we mean that the pattern of a reinforcement is controlled by temporal events in the external environment; and by *ratio intermittent reinforcement,* we mean that it is dependent on the subject's behavior.
4. By *fixed* and *variable patterns* of *intermittent reinforcement* we refer to the relationship between the reinforced and nonreinforced responses. Interval and ratio may, of course, be either fixed or variable in pattern.

During the past 10 years there has been a growing interest in intermittent reinforcement with children, as shown by the publication of six

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investigations. Five studies have approached the problem by keeping number of training trials constant and varying number of reinforcements. Three of these experiments (3, 9, 12) had training patterns on variable ratios; two (6, 7) on fixed ratios. Although there were differences in the ages of the subjects, intelligence levels, types of reinforcers, number of trials and number of reinforcements, all but one (6) found that intermittent reinforcement procedures more resistance to extinction.

The other study (15) treated the problem by holding the number of reinforcements constant and varying the number of trials. Using trinkets for rewards, Pumroy gave three reinforcers under each of four conditions of training according to percentage of trials reinforced; i.e., 3 trinkets for 3 responses (100%); 3 trinkets for 6 responses (50%); 3 trinkets for 9 responses (33 1/3%); and 3 trinkets for 18 responses (16 2/3%). The four schedules were given in a single session with order of presentation varied on a random basis. Furthermore, the schedules were interspersed with two-minute intervals of nonreinforcement to obtain measures of resistance to extinction. Under these conditions, number of responses during extinction increased with percentage of reinforcement, and the 100% schedule showed more resistance to extinction than the 16 2/3 % schedule.

PROBLEM

Our objective was to study further intermittent reinforcement with reinforcements held constant using a larger number of reinforcers and observing behavior under two types of schedules given to subjects in equated groups.

The specific problem may be stated as a question: For a given number of reinforcements, is there a difference in the extinctive behavior of two groups of preschool children when the training of one group is on a continuous reinforcement pattern, and the training of the other group is on a variable intermittent schedule with reinforcement following 20 per cent of the responses?

Information bearing on this question was derived from two experiments. Experiment I was a preliminary investigation.

EXPERIMENT I

Subjects

Eighteen preschool children from the Nursery School of the Institute of Child Development, University of Washington, served as subjects. The school is conducted on a three-hour day, five-days-a-week basis. There were 8 boys and 10 girls ranging in age from 39 to 60 months. They came from families with fathers classifiable in the upper three occupational groups according to the Minnesota Scale for Occupational Rating (8, 19). The percentages are as follows: I, Professional, 65.6; II, Semiprofessional and managerial, 18.7; III, Clerical, skilled trades and retail business, 15.7.

Socioeconomic status of the children's families was also estimated by the Barr Scale Rating of Occupational Status (19). The mean rating for fathers' occupations was 15.17, which is 6.29 scale points above the mean for adult males in the general population.

Although not all the subjects had been given intelligence tests, the mean IQ of the group was estimated from Stanford-Binet scores of children attending the nursery school during the past three years. On this basis the mean IQ of the subjects is estimated to be about 116.

Apparatus

The situation designed to produce and record the essential behavior has been described in detail (1). Salient features of the apparatus consist of: (a) a response arrangement in the form of a wooden box with two holes, one above the other—the lower one to present a small rubber ball to the child and the upper one to receive it in making a response; (b) a device for delaying the return of the ball; (c) a motor-driven machine to dispense plastic trinkets[2]; (d) a clear plastic box for catching the trinkets; and (e) an ink-writing marker for recording responses and reinforcements.

Procedure

The 18 children were divided into two groups matched for age and previous experience in experimental situations. The mean age for Group A_1 (those to receive continuous reinforcement training) was 49.4 months, while the mean age for Group B_1 (those to have 20 per cent intermittent reinforcement training) was 48.4 months.

Prior to participating in the experiment, each child was "prepared" in a standardized manner. First, the experimenter, a young woman wearing an attractively colored smock, makes herself known to the children by watching them at play in the school yards and rooms. After a few days the children begin to regard her as a member of the teaching staff. Second, when a child is selected to serve as subject, the "teacher" invites him to come and "play with some toys." On entering the laboratory, she suggests that he sit in front of a table upon which are a plastic dog and small tin dog house. The experimenter then demonstrates how the toy works. She puts the dog in the house and shows that tapping on the table will cause the dog to shoot out. She demonstrates also that the dog pops out when called loudly by his name, "Sparky." The child is then encouraged "to make the dog come out." Once he takes charge of the toy, play is permitted until he has made the dog come out at least four times. A delay of 15 seconds between insertion and pop-out is the criterion for termination. Third, immediately after the termination of warm-up activity, the experimenter invites him to come to another table upon which the apparatus stands. When he is settled in the chair before the apparatus, a plywood screen is raised and the ex-

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[2] Trinkets were purchased from the Viking Company, 530 Golden Gate Avenue, San Francisco 2, California.

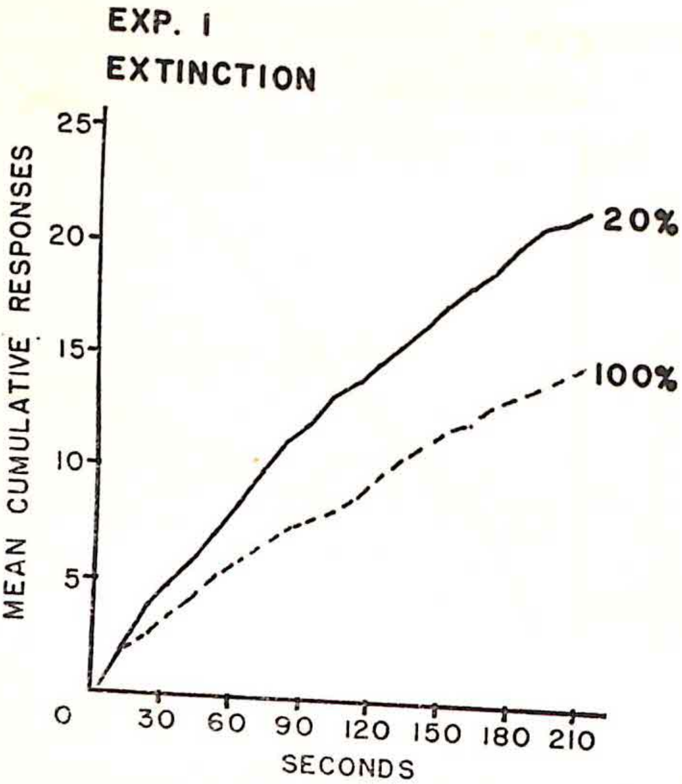

FIGURE 1—Mean cumulative responses during the three-and-a-half minute extinction period for the two groups in Experiment I.

perimenter proceeds with the instructions. She shows a handful of trinkets and says: "You can get some of these to keep, to take home with you." She hands the child the ball and says: "When you put the ball in there (pointing to the upper opening) some of these toys will come down here (pointing to the covered plastic box). The ball will come out here again. You can put it back into the top hole as many times as you like. We will leave all the toys that come down in the box until we are finished, and are ready to go." The experimenter takes a seat six feet to the rear of the subject and offers no further suggestions or instructions.

Comments and questions directed to the experimenter are reacted to in a pleasant nondirective fashion, e.g., "You think no more will come out." "You think the thing is broken." When the session is over, the receiving box is opened, the trinkets are given to the child, and he is returned to his group.

Children in Group A_1 were given six trinket reinforcements in consecutive order followed immediately by a period of three-and-a-half minutes of no reinforcement. On the other hand, those in Group B_1 were given six reinforcements distributed over 30 responses with trinkets delivered

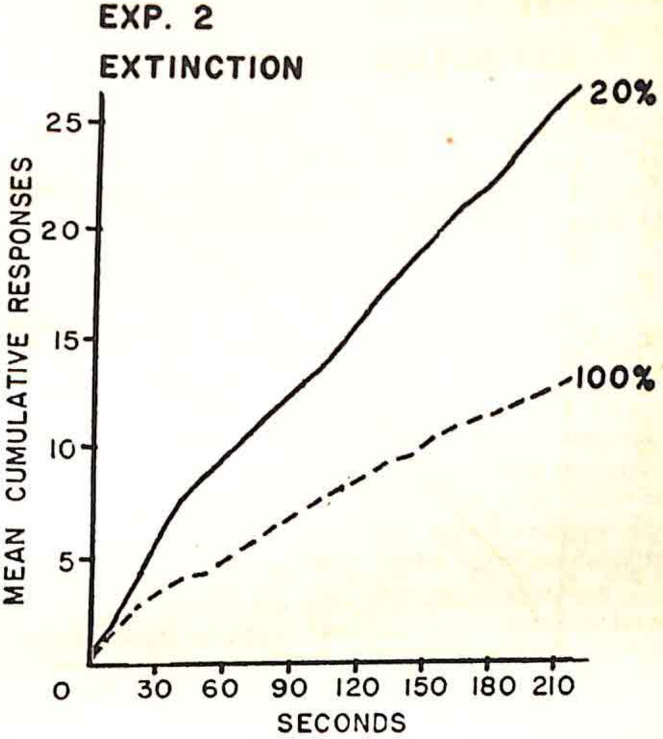

FIGURE 2—Mean cumulative responses during the three-and-a-half minute extinction period for the two groups in Experiment II.

on trials 1, 6, 13, 17, 23, and 30. The apparatus was adjusted so that (a) the minimum time between responses during training and extinction was 3.3 seconds, and (b) each response during training, whether reinforced or not, was followed by a one-second motor hum from the trinket dispenser.

Results

Results, in terms of the number of responses emitted during the three-and-a-half minute extinction period, are shown in Figure 1. The mean number of response for the 20 per cent group is 22.0; the mean for the 100 per cent group is 15.3. The difference of 6.7 responses is statistically significant between the 5 and 10 per cent levels of confidence.

EXPERIMENT II

Subjects

In this experiment, the subjects were 21 preschool children, 13 boys and 8 girls, from the Nursery School of the Institute of Child Development, none of whom had participated in Experiment I. They ranged in age from 32 to 55 months and like the children in the previous groups, had fathers in the upper categories of occupations. Also, it is highly probable that the mean IQ of this group was about the same—116.

Apparatus

The apparatus was the one used in Experiment I, with one significant alteration. The trinket dispenser motor sound was *accentuated by a buzzer.* Duration of the buzzer sound was exactly the same as the motor hum in Experiment I.

Procedure

The 21 children were divided into two groups. Group A_2 (continuous reinforcement training) consisted of 9 boys and 4 girls having a mean age of 44.1 months. Group B_2 (intermittent reinforcement training) had 4 boys and 4 girls with a mean age of 45.6 months. All had had a limited and equivalent amount of experience in previous experimental situations.

The preparation procedure was identical to that in Experiment I. Training and extinction procedures were similar, except that five rather than six trinkets were used as rewards. Children in Group A_2 received five consecutive trinket reinforcements while those in Group B_2 received five distributed over 25 responses in the following pattern: 1, 6, 13, 17, and 25. The buzzer sound followed each response during training whether reinforced or not.

Results

Analyses of the data show that Group B_2 gave more responses than Group A_2 during extinction. Figure 2 shows these results in graphic form. Mean number of responses for Group B_2 is 26.2 and for Group A_2 is 13.0. The difference of 13.2 is statistically reliable at the 1.5 per cent level of confidence.

DISCUSSION

Findings from both studies indicate that under the experimental conditions described, for a given number of reinforcements a variable ratio intermittent distribution is associated with more resistance to extinction than a continuous schedule. The fact that the difference in Experiment II is reliable at a higher level of confidence than that in Experiment I suggests that the increased distinctiveness of the auditory stimulus served as a stronger conditioned reinforcer.

Our results are consistent with findings from many studies with infrahuman subjects in which reinforcements are held constant, and they are similar to the results of most child studies in which number of trials are controlled. They are in contrast to the findings of Pumroy (15) which were briefly described in the early part of this paper. Since the two studies had markedly different experimental designs, it is difficult to determine which conditions were influential in producing a reversed relationship. One aspect of Pumroy's study suggesting further analysis is the consequences of dispersing, in a single session, blocks of intermittent reinforcement with short periods of extinction. It would seem that large blocks of training might produce different results than short blocks, and that intervals between training blocks might be more influential in the earlier versus the later phases of training.

The present study provides information that should make it profitable to go on to investigate with groups of children intermittent schedules and their interrelationships. Investigators working with animals have offered some provocative leads. Their suggestions include an analysis of the definition of the response unit (13), the properties of the nonreinforced trials during training (5, 6), and the role of emotional behavior generated by the nonreinforced trials (2, 18). There is a great deal of potential material here for an experimental analysis of child behavior and development.

Even when information on intermittent reinforcement was based primarily on infrahuman subjects, writers could see possible applications to child growth and behavior. Thus Keller and Schoenfeld say:

> With the facts of P-R [periodic reconditioning] in hand, you should be able to make some critical deductions about educational procedure which strive to control behavior. You should, for example, see how one would go about teaching a child to be persistent in the face of failure. One would make sure, in training for skill, for confidence at work, or for willingness to persist in social activities, that the child is guaranteed some measure of success and approval regularly at first, but later only occasionally, so that he will not give up in the face of setbacks (11, p. 101).

Perhaps the time is not too long before generalizations about the effects of adult-child interactions may be derived from laboratory studies with children.

SUMMARY

The problem for investigation is whether variable ratio intermittent reinforcement training results in more resistance to extinction than continuous reinforcement training when the number of reinforcements is held constant. Two experiments involving operant or instrumental conditioning techniques were performed with 39 preschool children. Six reinforcements (plastic trinkets) were used in the first experiment, five in the second. Intermittent training patterns consisting of reinforcements on 20 per cent of the responses were employed in both investigations. Results are in agreement with those from studies using subhuman subjects in that the intermittent reinforcement showed more resistance to extinction than the continuous reinforcement. The findings are discussed in relation to other investigations with children.

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ORGANISMIC GROWTH: SOME RELATIONSHIPS WITHIN THE INDIVIDUAL AMONG CYCLES OF GROWTH IN PHYSICAL CHARACTERISTICS

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Interrelatedness among growth processes is considered by many psychologists and educators to be characteristic of intra-individual human growth. As yet, however, few studies of intra-individual interrelationships have been reported, and these have usually been based upon graphical analyses. Honzik and Jones (4) employed this procedure in their study of physical and mental growth during the preschool years. Again, Stolz and Stolz (8) used primarily graphical methods in presenting the results of their investigations on the synchronous nature of growth in physical characteristics.

The possibility of using other procedures for the study of longitudinal growth data was discussed by Jones (2, p. 660), who pointed out that data from time series "have not yet been employed in a systematic analysis of the concept of organismic unity." Correlations have been used rather infrequently in studies of intra-individual growth, although we believe that suitable techniques are available. In the P-technique (3), for example, paired scores for intra-individual coefficients of correlation might be measures of weight[1] and strength of grip of the right hand of an individual at a series of ages during adolescence, as in Table 1. [The data are for Case 50 in the California Adolescent Study (5).] The measures for each characteristic are sampled over a number of ages (column 1) for an individual.

There is, however, a major difficulty connected with using measures of status, as in Table 1, for intra-individual correlational analysis.

Each series of measures will have a high rank-order correlation with the chronological ages at which the measures were determined, so that the intercorrelations for the measures themselves must necessarily be large. (For Table 1, the correlations (*rho*) between CA and weight, and CA and strength, are about .98.) Correlational analysis is clearly not appropriate for studying this type of longitudinal data.

A more promising line of inquiry might be with reference to the relationship among the *rates of change* of measures of physical characteristics. The annual rates of change in metric units for two physical characteristics,

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[1] The techniques of measurement for the subjects of this report are described by Stolz and Stolz (8), who also report on the reliabilities of the measures.

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TABLE 1

STATUS MEASURES OF WEIGHT AND STRENGTH OF RIGHT GRIP PAIRED BY CHRONOLOGICAL AGE

(Case 50)

CA	*WT* (gm.)	*RG* (kg.)
11.0	359	23
11.6	361	26
12.0	370	27
12.6	386	28
13.1	415	27
13.6	422	31
14.1	470	31
14.6	462	35
15.1	487	35
15.6	548	42
16.1	596	51
16.6	620	52
17.1	638	53
17.6	633	59
18.1	677	61

weight and right grip, are listed on the left side of Table 2 (Case 50). These are computed by dividing the difference between successive measures by the interval of time in which the change occurred (9). Spearman's rank-order correlation between the two series of measures is —.15. In this instance, the obvious conclusion would seem to be that there is no significant relationship between the rates of change in weight and right grip during the adolescent years. There may, however, be a relation of a sequential nature, or related cycles of growth.

Time Series Involving Cycles

Economists have long recognized that cycles in one phenomenon may accompany cycles in some other. Thus, increases, or decreases, in the Index of Industrial Stocks may precede, coincide with, or follow similar changes in the Index of General Business Activity. In one example, presented by Mills (7, p. 390), the coefficient of correlation between the values of these two indexes at concurrent times was found to be .55; however, the value of the coefficient of correlation was increased to .76 when the Index of Industrial Stocks at a given time was paired with the Index of General Business Activity that prevailed four months later.

Cattell (3, p. 363) has used the phrase "time analyzed P-technique" to refer to the use of P-technique correlational and factorial analysis involv-

TABLE 2

MEASURES OF RATE PAIRED BY CA AT WHICH STATUS MEASURES WERE OBTAINED AND BY STAGGERING SO AS TO PAIR THE MAXIMUM RATES OF CHANGE*

(Case 50)

PAIRED BY CA			PAIRED AT PEAK RATE OF CHANGE			
CA	WT	RG	CA	WT	CA	RG
	Rate of Change			*Rate of Change*		*Rate of Change*
11.6	3	5	11.6	3	12.0	3
12.0	23	3	12.0	23	12.6	2
12.6	27	2	12.6	27	13.1	−2
13.1	58	−2	13.1	58	13.6	8
13.6	14	8	13.6	14	14.1	0
14.1	96	0	14.1	96	14.6	8
14.6	−16	8	14.6	−16	15.1	0
15.1	50	0	15.1	50	15.6	14
15.6	122*	14	15.6	122	16.1	18
16.1	96	18	16.1	96	16.6	2
16.6	48	2	16.6	48	17.1	2
17.1	36	2	17.1	36	17.6	12
17.6	−10	12	17.6	−10	18.1	4
18.1	88	4				

* In the growth cycles, the age of maximum rate of change in weight is 15.6 years, and in strength of grip it is 16.1 years. The former characteristic is said to "lead" the latter by 16.1 − 15.6, or .5 years. It might also be said that the latter lags behind the former by .5 years.

ing "staggered or lead and lag correlations." He suggested that "Factorizations could thus be carried out with correlations based on different amounts of lead and lag to see which give the clearest factor structure and the highest loadings. . . . This will probably prove to be one of the most powerful means of exploring causal relations when using factor analysis aided by data employing a time signature" (3, pp. 363-364).

Physical growth is known to occur in cycles. It is also known that the peak rates of growth in various physical characteristics do not necessarily occur at the same point in time (8). Jones (6) has shown that the puberal spurt in strength tends to occur later than in weight. This is illustrated by Case 50 in Table 2, and the peak rate of growth is also later in strength.[2]

If we plot these increments on a base line which adjusts for maximum growth age, the result is shown in Figure 1. Here we note an apparent

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[2] The semi-annual fluctuations within a cycle in the early part of the data, shown in Figure 1, illustrate the condition reported by Jones (6) that rates of growth in different characteristics vary with the season. Growth in strength is generally greater in the spring, but in weight it is generally greater in the fall months.

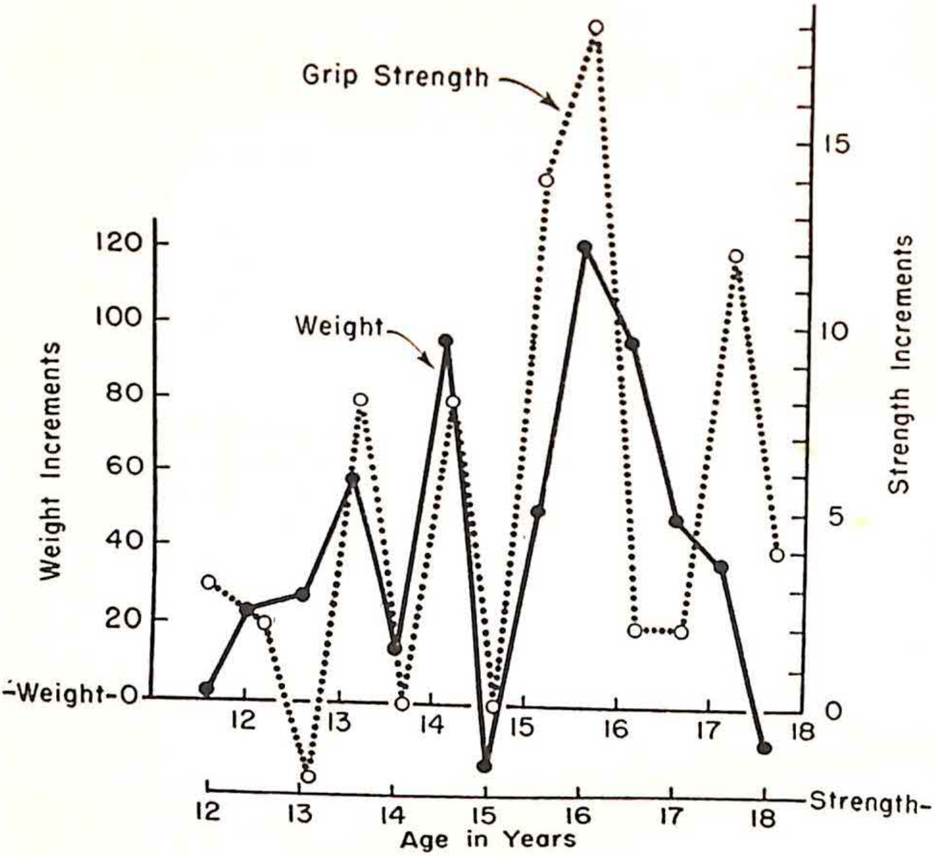

FIGURE 1—Growth increments in weight and strength for Case 50 plotted on a base line which adjusts for maximum growth age.

relation between the weight and strength increments. The effect of the six-months adjustment (shifting back the strength increments to allow for the six-months difference in peak rates of growth) is to change correlation of rates from —.15 to .55 (significant at the .05 level).

From this one case, and from only two variables, it appears that the numerical value of a coefficient of correlation may be changed by staggering one series of measures so as to consider the time-lag in cyclical growth. In the illustration, the pairing of scores was altered by placing the measures of maximum rates of change in juxtaposition. There may be other ways of matching scores, for instance, by pairing measures at the onset or at the end of the adolescent spurt in growth in various characteristics.

Correlational Matrices from Original and Staggered Series

Since it has been shown that a coefficient of correlation between measures of rate of change in physical characteristics can be modified by a

TABLE 3

THE NUMBER OF VARIABLES CORRELATED AFTER STAGGERING THE MEASURES OF RATE OF GROWTH, AND SOME EFFECTS OF THE STAGGERING

Case	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
50	8	2	10	17	9	3	1	.28	.36
52	7	4	11	34	12	11	3	.31	.28
190	7	3	10	24	12	4	0	.29	.39
234	7	4	11	34	10	7	3	.18	.26
244	7	4	11	34	1	18	2	.46	.29

maturity adjustment in the pairing of the scores, it may be of interest to determine how often and how extensively such changes occur, and to compare factorial patterns obtained from matrices based upon different pairings of measures, such as pairing by chronological age and by peak rate of growth.

Some answers to such questions were sought from correlational and factorial analyses of the measures for each of five cases in the California Adolescent Study.[3] Information about each of these subjects is summarized in Table 3, the columns (1 to 9) containing the following data:

Column 1. The number of characteristics[4] for which the peak rates of growth occurred at the same chronological age.
Column 2. The number of characteristics for which the maximum growth rates were placed in juxtaposition without the loss of too many measures.
Column 3. The number of characteristics available for correlation and factorial analysis.
Column 4. The number of coefficients of correlation involving adjusted variables.
Column 5. The number of coefficients of correlation involving the adjusted variables that were increased by at least .20 as a result of the adjustment.
Column 6. The number of coefficients of correlation involving adjusted variables that were decreased by at least .20 as a result of the adjustment.
Column 7. The number of coefficients of correlation among nonadjusted variables that were changed by at least .20 as a result of the adjustment.
Column 8. The median value of the *rho*s prior to adjusting the measures.
Column 9. The median value of the *rho*s after the adjustment.

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[3] Several conditions, not all of which were met for a large number of subjects in the Adolescent Growth Study, would be desirable for a more complete analysis of this problem: (1) more frequent measurement, possibly every three months; (2) equal intervals between measurements—our intervals varied by up to .1 year from a half-year interval in 15 per cent of the measures; inequality of intervals may affect the data when rates of change are adjusted to take into account lead and lag in maximum rates of growth; (3) comparisons of the results of these analyses with other measures of development, such as rates of maturing.

[4] The characteristics studied are listed at the bottom of Table 5.

From a consideration of the contents of Table 3 it is seen that:

1. For each subject the number of characteristics with maximum growth rates at the same chronological age is either seven or eight.

2. It was possible to adjust the measures for two, or three, or four of the other variables so that for each case a matrix of either 10 or 11 variables could be obtained for which the measures were paired for the rates of maximum growth (column 3).

3. From one-half to two-thirds of the coefficients involving the adjusted variables were modified by at least .20 as a result of the adjustment (colums 4, 5, and 6).

4. In some subjects, the adjustment resulted in more increases than decreases in the values of *rho* (Case 190); in other subjects the reverse was found (Case 244) (columns 5 and 6).

5. Few of the correlations involving the unadjusted variables were changed by as much as .20 points as a result of the adjustment (column 7).

6. The median value of all coefficients in each matrix increased in some cases and decreased in others by amounts varying from .03 to .17 (columns 8 and 9).

7. It appears that staggering rates of growth for physical characteristics so as to pair measures for maximum rates of growth does produce some changes in the values of the coefficients of correlation, and that the frequency and extent of the changes vary from one individual to another.

Significant Rhos

It has been shown that varying numbers of *rhos* were changed by at least .20. The numbers and percentages of *rhos* significant at the .05 level in each type of matrix are shown in Table 4.

The percentages of the *rhos* that were significant at the .05 level vary somewhat from one type of matrix to the other within a given subject. If

TABLE 4

NUMBER OF RHOS SIGNIFICANT AT THE .05 LEVEL

		Number and Percentage of Rhos Significant at the .05 level			
Case	*Total Number of Rhos*	Paired by CA		Staggered Measures	
		Number	%	*Number*	%
50	45	6	13	8	18
52	55	10	18	12	22
190	45	7	16	6	13
234	55	11	20	8	14
244	55	19	34	11	20

we are willing to assume independence in our tests of significance for each individual, we may determine whether the number of *rhos* significant at the .05 level is greater than we can expect by chance (1). Eight of the critical ratios were in excess of 1.96, and the other two were each 1.75. We may conclude that the number of significant *rhos* is in excess of what might be expected by chance. Nevertheless, a large percentage of the *rhos* are not significant even at this level.

Factor Loadings

Evidence concerning the principle of unity of growth may be found from the values of the first common-factor loadings computed from the correlational matrix for each individual. Large values would imply a high degree of unity of growth in the physical characteristics studied.

The first-factor loadings from each matrix for each subject were obtained, first from the original and then from the staggered data. Unity was entered in the diagonal cells in order to maximize the values of the loadings. The results are shown in Table 5.

Factor loadings from original and staggered data showed similarity in some cases and dissimilarity in others. For instance, for one variable (in Case 190), the loadings were .77 in both matrices; in Case 52, the

TABLE 5

FACTOR LOADINGS FOR ORIGINAL AND FOR STAGGERED DATA

Variable†	*Case 50*		*Case 52*		*Case 190*		*Case 234*		*Case 244*	
	*O**	*S**	*O*	*S*	*O*	*S*	*O*	*S*	*O*	*S*
WT	.76	.90	.93	.83	..	..	.83	.63	.85	.49
HT	..	..	.67	.57	.77	.77	.66	.77	.68	.75
SL	.46	.55	.65	.66	.57	.69	.71	.74	.55	.68
BA	.79	.78	.64	.38	.63	.83	.50	.64	.61	.46
BI	.64	.69	.52	.56	.75	.77	..	..	..	..
CD	.33	.35	.30	.59	.66	.61	.39	.30	.75	.84
CC	.62	.54	.22	.73	.34	.51	.01	.40	.68	.26
AC	.44	.56	.80	.69	.63	.77	.56	.44	.80	.69
TC	..	..	.76	.64	.78	.47	.80	.59	.73	.59
LC	.69	.81	.77	.57	..	..	.62	.50	.75	.61
RG	.31	.64	—.02	.21	.27	.57	.47	.52	.79	.75
LG	.64	.53	..	..	.65	.70	.51	.73	.62	.59
Percentage Variance	35	43	40	37	39	46	35	34	51	40

* *O*—original series; *S*—staggered series.

† The abbreviations are: WT—weight; HT—height; SL—stem length; BA—bi-acromial width; BI—bi-iliac width; CD—chest depth; CC—chest circumference; AC—arm cirmumference; TC—thigh circumference; LC—leg circumference; RG—right grip; LG—left grip.

loadings for one characteristic changed from .22 to .73. The percentage of the variance accounted for by the factors increased in some cases and decreased in others as a result of staggering the measures. The percentages for original and for staggered data, respectively, are for Case 50: 35 and 43; Case 52: 40 and 37; Case 190: 39 and 46; Case 234: 35 and 34; and Case 244: 51 and 40. There are, then, individual differences in the effects of staggering the data upon the resulting factor loadings, unless these differences can be shown to be due to chance. The *rhos* between the two sets of first-factor loadings were .60, .48, .14, .56, and .28 for Cases 50, 52, 190, 234, and 244, respectively. The similarity between first-factor patterns from original and staggered data varies from one individual to another, and, generally, there is considerable modification in the patterns.

SUMMARY

It has been shown by Stolz and Stolz (8) that for any individual the peak rates of growth in different physical characteristics may or may not occur at the same chronological age during adolescence. They employed the term "asynchronous" to describe the situations in which the maximum rates of growth do not occur at the same chronological age.

It occurred to the writer that the presence of cyclical asynchronous growth in physical characteristics might obscure the presence of similarities in the patterns of growth within the individual when the measure of similarity is a coefficient of correlation of the P-type. If the fact of asynchronous growth were controlled by using "staggered or lead and lag correlations" (3) it might be that the index of the relationship among measures of rates of change would be increased, and that the existence of unity in the growth patterns would be more apparent than if the correlations (P-technique) were computed by pairing measures by chronological age.

Rates of change in physical measures at a series of chronological ages were obtained for each of five boys in the California Adolescent Study. Spearman's *rhos* were computed between the rates matched for the age at which the measures were obtained. The first-factor loadings for each of the resulting matrices (one for each boy) were computed, with unity as the diagonal entry. Then the pairing of the rates was adjusted by placing in juxtaposition the maximum rates of growth in each characteristic, leaving the serial order of the measures unchanged. Again, the first-factor loadings were determined.

The effects of using staggered or lead-and-lag correlations were investigated by comparing the values of the two sets of *rhos* and of first-factor loadings. From 50 to 70 per cent of the *rhos* involving the staggered measures were either increased or decreased by as much as .20. The nature and the extent of the change varied from one boy to another. In one case, the *rhos* involving the adjusted or staggered measures tended to decrease, in another, they increased, and in another there were about equal numbers of increases and decreases. The percentages of the *rhos* for each boy that were significant among the original coefficients and in the lead-and-lag correlations varied from 13 to 34, with the majority being less than 20 per cent. Such evidence does not favor a hypothesis of unity of intra-individual growth when unity is defined by coefficients of correlation between rates of physical growth during adolescence.

The values of the first-factor loadings from the two sets of matrices were markedly similar in some instances, and quite different in others. The rank-order coefficients of correlation between the patterns varied from .14 for one boy to .60 for another.

The percentages of the variances accounted for by the first factor were 35, 40, 39, 35 and 51 for the original matrices and 43, 37, 46, 34, and 40 from the matrices involving the staggered correlations. In neither procedure does the first factor appear to imply a high degree of unity of growth within the individual.

It may be concluded that in addition to individual differences in physical growth, marked intra-individual differences occur. These latter cannot be attributed solely to the effects of differences in the timing of cyclical growth in physical characteristics.

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THE RELATIONSHIP BETWEEN PARENTAL ACCEPTANCE AND ADJUSTMENT OF CHILDREN[1]

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The importance of parental attitudes in the development of personal and social behavior is one of the basic tenets in the fields of child development and parent education. In the clinician's therapy room this relationship seems obvious. In the classroom a teacher may often be sure the reason "Johnny can't——" is because of parental attitudes. But can the generalizations from the clinician or from the teacher or, for that matter, from studies of atypical samples of families and children in general be valid guides for assessing the behavior of children?

THE PROBLEM

In this study an attempt was made to measure the relationship between parental acceptance and personal and social adjustment characteristics of children for a carefully-controlled sample of 256 parents and their children. This problem is suggested by several considerations. Present research findings indicate certain home and family influences are related to various attitudinal and behavioral characteristics of children, but few of the studies have been concerned with parental acceptance per se (24, 25). Most of the studies have been concerned with various categories of "problem children," or preschool children; few studies have been based on any controlled samples of children in families (1, 2, 4, 5, 13, 14, 15, 16, 18, 22, 23). In addition, some writers have implied that there is a relationship between the degree to which a child is accepted by his parents or other "significant" persons and his personal and social characteristics although empirical evidence has not been cited (20). Therefore, a statistical investigation of the

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relationship between parental acceptance of children and the personal and social adjustment characteristics of the children for a fairly large sample of "typical" families seemed timely.

MEASURING INSTRUMENTS

The Porter Parental Acceptance Scale, apparently unique and the first of its kind, was used to measure the degree to which parents may be said to accept their children. An operational definition of parental acceptance of children and the development of a scale to measure this variable have been reported by Porter (17), together with data on its reliability and validity. Reliability coefficients for the samples used in the present study have been reported (12) and it is possible to offer further indirect evidence for the validity of the items comprising the acceptance scale.

Porter reports that the items of the scale were derived from an operational definition of parental acceptance, and a conceptual scheme was used to guide the construction of the responses. High agreement was found among the judges' rankings of responses (17).

In this study, an item analysis was made in an effort to estimate the degree of internal consistency of the Porter scale. The group comprising the highest quartile in total test scores was compared with the group comprising the lowest quartile, with respect to their mean scores on each item. The difference between means was tested for significance to determine whether the item had discriminated effectively between high and low scoring groups. Only one item failed to show a significant t value for the item analysis of fathers' responses. For the other 39 items, t values ranged from 2.26 to 8.00; for 33 of the items the t values were greater than 3.46, the value needed for a probability level of .001 ($N = 64$ in each quartile). Only one of the items failed to discriminate between high and low scoring mothers. The t values of the remaining items varied between 2.61 and 9.30 for the mothers. Thirty-five of the items had t values in excess of 3.46. It is quite clear that the items discriminated consistently between high and low scorers, justifying the assumption of a high degree of item validity when the total test score is the criterion.

Several methodological and theoretical considerations limited the selection of personality tests which might have been used to measure personal and social adjustment characteristics of the children. The sample design and contemplated field procedures for the study made it impossible to consider using any of the projective devices such as the CAT, TAT or Rosenzweig Picture-Frustration Test. Since only fifth grade children were going to be used as subjects, many of the personality tests including the Bernreuter Personality Inventory, the Bell Adjustment Inventory, the Personal Audit, the Mooney Problem Check List or the Thurstone Temperament Schedule could not be used, since all of these inventories begin with the seventh or ninth grade level.

A review of several test bibliographies showed that two instruments could be considered adequate for measuring personal and social adjustment characteristics of fifth grade children. These were the California Test of Personality (26) and the Rogers Test of Personality Adjustment (19). The California test has been widely used. There is considerable reliability and validity data available for it; yet there are some important criticisms of this test (7, pp. 60-62; 8, pp. 55-59). Although the Rogers test is older than the California, it was examined for possible use. Adequate reliability and validity data were available. It also appeared to possess several advantages over the California test for the purposes of this study. Children's responses to the California test are limited to a "Yes" or "No" choice. The indirect testing techniques used in the Rogers test permit the child to express a wide range of responses: The child can compare his present self with his ideal self and among other things, compare himself with his peer group. Even though the Rogers test was developed several decades ago, the nature of the responses obtained from it fit very well with current phenomenological personality theory. Since the theoretical basis of this study, as described by Hawkes (11), rests upon a phenomenological basis, the Rogers test seemed to be the more appropriate test for the purposes of this investigation. In addition to the statistical support which might be cited for support of the use of the Rogers test, it should be pointed out that the test is very well disguised and has received favorable comment from clinicians who have used it [see Louttit, in Buros (7, p. 41)]. With these considerations in mind, the Rogers test was adopted for use in this study.

The decision to adopt the Rogers test also led to the definition of the types of children's adjustment characteristics that were studied. Since the Rogers test is an older test, a brief description of the test and its reliability and validity characteristics is given. Four scores and a total score can be derived (19): The first of the diagnostic scores Rogers called the personal inferiority score which indicated roughly the extent to which a child thinks himself to be physically or mentally inadequate—duller, weaker, less good-looking, less capable than his peers. The second score is social maladjustment, the extent to which he is unhappy in his group contacts, poor at making friends, poor at social skills. The family relations score indicates the degree of his conflict and maladjustment in his relations with his parents and siblings, such as jealousies, antagonisms, feelings of being rejected, and overdependence. The fourth score, the daydreaming score, is designed to indicate the extent to which the child indulges in fantasies and unrealistic thinking. Rogers considered the total score as an indication of the seriousness of the child's maladjustment.

Reliabilities of the test scores, determined for a sample of 43 children by a retest given after an interval of one month, ranged from .65 to .70. The reliability coefficient for the total score was .72. In the present study, 51 children were retested after a one-week interval. Reliability coefficients for the four scores varied from .67 to .77 and the reliability of the total score was .71.

Rogers used three methods to estimate the validity of the test scores. Comparisons were made between the personality ratings given the children by clinicians who knew them well and the children's test scores. These correlations ranged from .39 to .48. The extent of the agreement among the clinicians' rating was of similar magnitude. Rogers concluded that the test gave scores which were as valid as ratings made by clinicians who knew the children. An individual study of children making the highest and lowest scores on the test and the agreement between identification of "problem" children selected by means of test scores and by teachers' ratings were other methods used to estimate the validity of the test. In summarizing the results of the validity checks for the adjustment test, Rogers states, "The fact that the results are fairly consistent throughout points to the conclusion that the test does roughly measure children's attitudes. The test scores were found to be a crude but reasonably accurate yardstick for measuring unhappiness and maladjustment in the youngsters studied" (19, p. 80).

THE SAMPLE

To facilitate sampling procedures and to gain some control over the measurement of the variables, the ages of the children were held constant by using the fifth grade level as the criterion for selecting children. Acceptance measurements of the parents were also controlled to the extent that each parent was asked to respond to the acceptance scale on the basis of his attitudes and behavior toward his fifth grade child. Using children of only one grade level also permitted development of a sample design by which suitable families were selected by means of identifying the children of those families.

It also seemed essential to control several characteristics of the families. Two criteria, that both natural parents of the child must be living together with the child and that the family must consist of at least two children, were established. For methodological reasons, the selection of families was limited to rural areas and small towns (2500 to 10,000 population by the 1950 census). Four states, Iowa, Ohio, Kansas and Wisconsin, were the primary areas of sample selection.

Since the most practical manner of selecting a sample of families from this universe appeared to lie in first selecting the children from fifth grade classes in school, all school districts having fifth grade classes were defined as possible sampling points in each state.[2] Among the several possible sampling plans which might have been used to draw samples of fifth grade classes in each of the four states, a stratified random design seemed most appropriate.[3] With such a sample it is always desirable to "scatter" the sample points as much as possible, subject to time and cost limitations, and to keep the number of families at each sample point small. No precise calculations were made on the size of the sample at any point or on the number of sample points per state, but after consideration of time and cost estimates of the field work it was decided to have eight sample points per state with eight families selected at each of the sample points. Thus, the state samples consisted of 64 families and the total sample included 256 families.

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[2] Schools with less than 20 pupils in the fifth grade were combined into units with at least that number of children. An exception was made for one- or two-room schools which were not considered as possible sampling points because time and cost factors seemed to indicate that any sample containing such small units was impractical.

The eight sample points for each state sample were chosen from two population strata: (1) towns in the 2500 to 10,000 population range[4] and (2) rural areas. A proportional allocation was made between these two strata for the eight sample points in each state based on the total populations of the strata to the population of the state. For the Iowa sample, for example, two urban and six rural sampling points were required.

The two urban points were selected by a probability method based on the sizes of the populations of all the cities in Iowa in this stratum to the total population of the stratum. Each city within the defined range of population was listed by its 1950 census population. A cumulative population table was constructed based on these populations. Two numbers were then drawn at random (two cities were to be selected) between the lower limit (0000) and the upper limit (312,658) of the cumulative population distribution. If the number chosen was in the range of a given city's contribution to the size of the stratum that city was selected.

In the second stage of sampling for the urban stratum, the class of fifth grade children to be tested was selected within each of the primary sampling points. If there were only one elementary school with only one fifth grade class, the entire section was used. If there were two or more sections of fifth grade children, one section was chosen by the same probability method used in selecting the cities.

Sampling for the fifth grade classes in the rural stratum required the use of several sampling units. Counties were first selected on the basis of their total population by the probability proportional to size method described for the selection of the cities. Within each of the selected counties, a school or combination of schools was chosen by the same method. And finally, in only a few rural sample points it was necessary to select one class of fifth grade children from the several classes in the school.

All the children in the selected classes completed the Rogers test under the direction of the interviewer. They also filled out a short information blank which was used to determine if their family met the criteria for inclusion in the universe of families defined for this study. A random selection of eight children and hence, families, was drawn from the list of children whose families met the criteria. Four alternate families were also drawn and were used when necessary in the exact order of their selection.

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[3] Appropriate general references for the procedures used and for estimation from this type of sample are Cochran (9) and Hansen, *et al.* (10).

[4] Cities in this range which were parts of metropolitan areas were excluded from the urban strata.

Home interviews were used to obtain the parents' responses to the acceptance scale and several other scales not reported in this study. The fathers and mothers completed the Porter scale independently in the presence of the interviewer. Field work was begun in Iowa in October, 1954, and completed in Ohio in May, 1955. One researcher did all the testing and interviewing in all four states.

Not all of the originally selected families at many of the points were able or wished to cooperate in the study. Approximately 11 per cent of the Iowa sample, 30 per cent of the Ohio sample, 19 per cent of the Kansas sample and 22 per cent of the Wisconsin sample consisted of alternate families. Fifty-two families, approximately 20 per cent of the total sample, were alternate families.

A detailed description of the sample characteristics has been reported (12). In general, the sample was composed of a middle and lower socioeconomic class of rural and small town families. Representation in all occupational levels was achieved without any apparent bias in the direction of higher income or prestige occupations. Most of the parents had an educational attainment of high school or less. The majority of the parents were in their late thirties or early forties. Children in the sample were about evenly divided between boys and girls, 129 boys and 127 girls.

FINDINGS

Correlation analysis was used to test the hypothesis that there is a positive relationship between the acceptance scores of each of the parents and the five adjustment scores of the children.

The acceptance scale is weighted in such a manner that high score indicates greater acceptance of children while high scores on the several dimensions of the Rogers test indicate maladjustment. Therefore, if parental acceptance is related positively to the adjustment of the children, statistically moderate (or higher) *negative* correlations should be found.

The hypothesis was tested for the five father-child and the five mother-child relationships for each of the four state samples. Uncorrected data for each state sample were summated for the association of the variables for the total sample.[5] It appeared that the most meaningful coefficients to

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[5] The data from the four samples were combined into a total sample for an over-all estimate of association among the variables after it was determined that state sample differences for parents' and children's mean scores were nonsignificant. Analysis of variance was used to test for the significance of the differences of the mean parental acceptance scores for the fathers and mothers and for the children's five mean adjustment scores for the four state samples. None of the F values was significant.

The analysis of variance was calculated on the assumption that each state sample was a simple random sample. While no direct test could be easily made to support this assumption because in this study a stratified probability sample with random selection of report were the average within-state correlations since these were based on a larger number of cases. Furthermore, minor interstate sample variations would be eliminated.

Before examining the total sample (average within state) correlation coefficients presented in Table 1, a brief summary of the relationships for the state samples might be given. Forty correlation coefficients were calculated for the relationships between the parental acceptance scores and the children's adjustment scores. Three of the values were significant at the 5 per cent level, but one of the coefficients was positive or opposite in direction from what had been expected. The largest correlation ($r = .27$, $N = 256$, $p < .05$) indicated only a slight relationship between parental acceptance and one of the adjustment variables. At the state sample level, there appeared to be virtually no relationship between the variables measured in this study. Table 1 indicates that essentially the same results were found for the total sample analyses.

Only two of the 10 total sample correlations reached the 5 per cent level of significance. The relationship between the fathers' acceptance scores and children's social maladjustment scores and the relationship between the mothers' acceptance scores and the children's personal inferiority scores may be taken as significant. Both of the coefficients were negative

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families only in the last stage was used, it was possible to compare unweighted sample point data with unbiased estimates and to determine if there was any significant variation among the sample point statistics for each of the state samples.

Because the several intermediate sampling units used for each stratum varied in size, the classes and the children within the classes were selected with unequal probabilities. Consequently, unbiased statistics for the samples should have been calculated by using properly weighted sample point data. But if it could be shown that unweighted data agreed reasonably well with properly weighted data, then calculations might be considerably simplified. Comparisons of weighted mean Porter parental acceptance scores for the fathers and the children's mean Rogers social maladjustment scores, the proportion of fathers who were farmers, and the proportion of wives who graduated from high school, for each state sample and for the total sample with similar unweighted statistics demonstrated that for the purposes of this investigation unweighted statistics would provide adequate estimates. The acceptance means for the total sample by each method of calculation were 132.83 and 132.82 for the acceptance scores and 14.94 and 14.80 for the social maladjustment scores. The proportion of farmers and proportion of wives who were high school graduates found by each method of calculation for total sample data were .27 and .30 and .55 and .55, respectively. Comparisons of results for each state sample showed slightly larger differences, but still very similar results. Cochran (9, Chaps. 10 and 11) and Hansen, Hurwitz, and Madow (10, Vol. I, Chap. 6, and Vol. II, Chap. 7) describe the rationale for calculating the weighted statistics. Details of the procedure used and the results obtained for this investigation, may be found in Burchinal (6, Appendix A, Calculation of Weighted Statistics).

These comparisons seemed to indicate that unweighted sample point data might be safely used, but there was still the question whether or not any significant variation existed among the eight sample point means for each state sample. To answer this question, the eight parental acceptance mean scores for each set of parents and the Rogers total mean scores for each state sample were tested by analysis of variance. None of the resulting F values was significant. Details of the calculations and results are presented by Burchinal (6, Appendix B, The Significance of the Differences Among the Parents' and Children's Mean Scores). On the basis of the results obtained by means of these studies of the data, the unweighted sample point data were combined into state samples as if the families comprising the sample were selected by a simple random method.

TABLE 1

AVERAGE WITHIN-STATE CORRELATION COEFFICIENTS BETWEEN PARENTS' ACCEPTANCE AND CHILDREN'S ADJUSTMENT SCORES

Parents	*Personal Inferiority*	*Social Maladjustment*	*Family Relations*	*Day Dreaming*	*Total Score*
Fathers	—.011	—.132	.046	.071	—.034
Mothers	—.120	.047	.029	.004	—.043

NOTE.—Each correlation coefficient is based on 256 pairs of cases.

or in the expected direction. The values, however, were very low and hardly warrant interpretation.

In general, the hypothesis for the relationship between parents' acceptance of children and the adjustment characteristics of the children was found to be untenable. Fifty correlation coefficients were calculated and only five were significant at the 5 per cent level. Moreover, the correlations which were significant were quite low. As measured in this study, there was virtually no relationship between parental acceptance of children and the adjustment characteristics of the children.

In view of the nonsignificant nature of the findings, the question might be asked: What relationship exists between the children's adjustment scores and values representing the combined parents' acceptance scores. It could be reasoned that children whose parents display marked differences in acceptance toward them would show greater indications of maladjustment as measured by the Rogers scores. This problem was investigated by correlating the differences between the parents' acceptance scores with the adjustment scores of the children. In line with the hypothesis stated earlier, it was assumed that there was an inverse relationship between the differences between the parents' acceptance scores and five adjustment scores of the children. In this case, the correlation values should be positive in order to support the hypothesis.

The differences between the parents' scores ranged from zero to 69. Approximately 62 per cent of the differences between the parents' acceptance scores were greater than 10 points, 34 per cent of the differences were greater than 20 points and 15 per cent of the differences were greater than 30 points.[6]

Since the results of the analyses for the relationships between the differences in parental acceptance and the children's adjustment scores were similar to correlation coefficients found earlier, the table of coefficients has been omitted.

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[6] The means, standard deviations, and a frequency distribution of the parents' acceptance scores have been reported elsewhere (12).

Only one of the 20 coefficients for the state correlations was significant ($r = .32$, $p < .01$). One total sample coefficient was also significant ($r = .14$, $p < .05$). None of the other correlation values, for either the state or total samples, was significant. The results of this analysis overwhelmingly demonstrated that the hypothesis for the relationship of the differences between the parents' acceptance scores and the children's adjustment scores was also untenable.

Since no relationship was found between the children's adjustment scores and the differences between their parents' acceptance scores, a further question, whether or not there was any relationship between the children's scores and the sum of the parental acceptance scores, might be asked. It was assumed that children whose parents are both highly accepting would show fewer indications of difficulty in the various areas measured by the Rogers test than children whose parents show little acceptance of them. Because the analysis of the association of the differences between the parents' acceptance scores and the children's adjustment scores showed virtually no relationship, there appeared to be no reason why the scores of the fathers and mothers could not simply be summed in order to test for this relationship. For this analysis, negative correlation coefficients were expected.

Only two of the values reached the level of significance. Both of these correlations were positive or opposite from the direction expected and both were higher than previous values ($r = .35$, $p = .01$; $r = .28$, $p < .05$). However, the other state and total sample values for these variables were all nonsignificant. Therefore, these two values were regarded as spurious results.

There was little evidence to support the assumption that the summed acceptance scores of the parents were related to the adjustment scores of the children.

In view of the fact that many of our insights into the psychology of parent-child relationships have come from clinical studies, many of which have been based on atypical groups of children and their parents, one might expect to find a greater degree of relationship between parental acceptance and adjustment of children for those cases representing extreme ends of each of the continua.

TABLE 2

CORRELATIONS BETWEEN LOW SCORING FATHERS' AND MOTHERS' ACCEPTANCE AND CHILDREN'S ADJUSTMENT SCORES

Parents	*N*	*Personal Inferiority*	*Social Maladjustment*	*Family Relations*	*Day Dreaming*	*Total Score*
Fathers ..	65	.040	—.218	.027	—.129	—.143
Mothers ..	62	.028	—.028	—.150	—.051	—.071

A stratified probability sample for this study was drawn from a universe defined as including all essentially rural families in the midwest that were "whole" families having two or more children with one of the children in the fifth grade during the 1954-1955 school year. Rural areas and cities not over 10,000 in population were included as possible sample points. The state samples each included 64 families and the total sample included 256 families. Both parents in selected families completed the Parental Acceptance Scale in the presence of the interviewer. The Rogers test was completed by fifth grade children in school under the direction of the interviewer. Approximately 80 per cent of the originally-selected families cooperated in the study. The remaining portion of the sample consisted of alternate families drawn randomly from the various sample points.

One hundred correlations were calculated for three possible relationships between the parents' and childrens' scores and for the four state samples and the total sample. Whether the scores of each parent were related to the children's scores or whether both of the parents' acceptance scores, (by difference and by sum) were related to the children's scores, the results were essentially similar: there was virtually no statistically significant association between the two series of scores. When correlations among the variables were calculated for extreme scoring groups of parents and children, the coefficients were essentially similar to those found for the total sample.

Two alternate conclusions were considered: (1) that no relationship existed among the variables or (2) the lack of association among the variables was principally due to inadequate measurement. Rejection of the first conclusion was based on the accumulated findings of other studies and commonly held theoretical formulations relative to personality development.

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THE EFFECTS OF TYPE OF STIMULUS PRETRAINING ON DISCRIMINATION PERFORMANCE IN PRESCHOOL CHILDREN

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Several recent experiments have demonstrated that certain types of stimulus pretraining facilitate subsequent discrimination learning and performance. Using adult human *Ss*, Dysinger (3) and J. Cantor (2) have demonstrated that *Ss* taught to respond to a set of stimuli with distinctive verbal responses subsequently perform better in a task requiring the learning of other responses to this same set of stimuli than do *Ss* who were given the same pretraining with an irrelevant (different) set of stimuli. Gerjuoy (4) and G. Cantor (1) report similar findings with elementary school and preschool *Ss*. Lawrence (6) found that if rats had first learned a simultaneous discrimination problem involving a given pair of stimulus cues, they subsequently learned a successive problem with the same cues more rapidly than did rats that had been trained on a different pair of cues in the first problem.

One interpretation of these results makes use of the hypothesis of acquired distinctiveness of cues. Briefly, it is assumed that making a distinctive response (e.g., a name) to a stimulus produces a distinctive stimulus which becomes part of the total stimulus complex. If a distinctive response is learned to each member of a set of similar stimuli, the effective similarity of these stimuli is reduced. This decreases the amount of generalization among them, which, in turn, decreases the difficulty involved in associating a new set of distinctive responses to the stimuli.

Another interpretation has been suggested by Kurtz (5) in specific reference to the Rossman and Goss (7) findings but presumably applicable to other similar studies. Briefly, Kurtz suggested that the function of the verbal pretraining is to establish appropriate "observing responses" which transfer into the second task. The name-learning, then, is interpreted as merely a convenient criterion that *E* may use to determine when the appropriate observing responses have been set up. In his own experiment, Kurtz established observing responses with a familiarization procedure

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that required *S* to say "same" when both of two pictures presented were identical and to say "different" when the two pictures were different. He was able to demonstrate that *S*s subsequently learned verbal responses to pictures that had been presented in pretraining faster than they learned verbal responses to pictures that had not been presented in the pretraining. He also demonstrated that this type of pretraining can be made to interfere with subsequent paired associates learning, presumably because inappropriate observing responses were established in the initial task.

The explanation which Kurtz offers for the Rossman and Goss findings is subject to experimental test. In the conventional relevant-irrelevant stimulus paradigm (1, 2, 3, 4), a group may be included which is given the familiarization procedure that Kurtz demonstrated will produce positive transfer. If the relevant stimulus group performs significantly better on the transfer task than does the Kurtz control, it may be concluded that the learning of names produces a facilitation effect greater than can be accounted for in terms of observing responses. The present experiment tests this hypothesis.

METHOD

Pretraining

Stimuli used in the pretraining have been previously used and described by G. Cantor (1). The stimuli were pairs of faces; pair A was female faces and pair B was male faces. Both were photographs of pen and ink sketches. A pretraining trial consisted of the simultaneous presentation of two stimulus pictures. Every block of four trials contained four different stimulus settings. One setting consisted of two identical pictures of one member of the pair. Another setting involved the presentation of two identical pictures of the other member of the pair. The two remaining settings were presentations of both members of the pair with the right and left positions of each picture counterbalanced.

Three groups of *S*s were differentiated with respect to pretraining experience. *S*s in Group R were given only Pair A and learned to say the name "Jean" each time one member was presented and "Peg" each time the other member was presented. A second group, Group I, was given only Pair B and learned to say "Jack" each time one member was presented and "Pete" each time the other member was presented. *S*s in Group D were also given Pair A. However, they learned to say "same" when the two pictures presented were identical and to say "different" when both members of Pair A were presented together. Other words or phrases indicating a likeness or non-likeness concept were accepted.

Correction was given for erroneous responses. Subjects used in the transfer task met a criterion of 12 consecutive correct pretraining responses. Those *S*s not meeting this criterion within 60 trials were not continued in the experiment.

Transfer Task

Immediately following pretraining the transfer task was administered. This was identical for all *S*s. The stimuli were two wooden boxes, 3½ inches square, identical except that each box had a different one of the two faces from Pair A (Peg and Jean) mounted on the side presented to the child. The boxes were presented in a "tray" on top of an 18-inch high stand; the entire apparatus was painted flat black. The boxes were such that they could be lifted by the child to obtain a marble located in a groove in the tray. For each *S* there was one arbitrarily "correct" stimulus. For each trial *E* put the boxes in prearranged presentation order and placed a marble under the appropriate box behind the stand out of sight of *S*. A trial consisted of *S*'s selection of one of the stimuli. He was rewarded for the correct response by obtaining a marble; no marble resulted from an incorrect choice and *E* indicated the box containing the marble. *S* was instructed to get as many marbles as possible and 30 transfer task trials administered. At the end of Trial 30, *S* exchanged the accumulated marbles for a toy which he had previously selected. The response measure was the number of correct choices made in the transfer task.

Subjects

The subjects were 70 children from the State University of Iowa Preschools and the Iowa City Parents' Preschool. Ages ranged from 3-6 to 5-6. Each treatment group consisted of an equal number of *S*s from an upper and lower age level. There were 26 *S*s in both Groups R and I; Group D contained 18 *S*s. Subjects were randomly assigned to each of the three treatment groups. All *S*s were run in the same experimental room.

RESULTS AND DISCUSSION

The means and standard deviations of pretraining data are given in Table 1. A treatment-by-levels analysis of variance of the mean number of trials to criterion in pretraining was not significant at the 5 per cent level. Correlation of the pretraining scores with scores obtained in the transfer task yielded Pearson coefficients of −.13 for Group R, .05 for Group D, and −.35 for Group I. The Fisher *z*-transformation test (8, p. 151) was

TABLE 1

NUMBER OF TRIALS TO CRITERION IN PRETRAINING

	Group R		Group I		Group D	
Age	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Younger	19.38	18.17	9.38	8.81	6.44	7.97
Older	7.46	6.34	6.15	6.58	4.67	11.46

TABLE 2

NUMBER OF CORRECT RESPONSES IN 30 TRANSFER TRIALS

Age	GROUP R *Mean*	GROUP R *SD*	GROUP I *Mean*	GROUP I *SD*	GROUP D *Mean*	GROUP D *SD*
Younger	19.54	6.02	15.92	3.74	17.11	5.05
Older	24.76	6.16	22.38	5.57	19.22	4.30

applied to the correlations. The results indicated that it is tenable to consider them random samples from the same bivariate population. The average correlation of −.17 was not significant, indicating that the differences in number of exposures to the stimuli in pretraining may not be considered responsible for score differences obtained in the transfer task.

The mean number of correct responses for each of the subgroups in thirty trials of the transfer task is given in Table 2. A summary of the treatments-by-levels analysis of variance for these data is given in Table 3. As shown there, the effect of treatments is significant at the .05 level of confidence, while the age factor is significant at the .001 level. The interaction is not significant. The difference between the means of Groups R and I was 3.00, with a t-ratio of 1.96 ($p = .05$); the Group R − Group D difference was 3.98 with a t equal to 2.36 ($p < .02$).

These results confirm the findings of G. Cantor (1) and others that the possession of names for the stimuli in a learning task enhances performance on that task. Furthermore, since Group R performed significantly better than Group D, it appears that the facilitation resulting from the stimulus familiarization procedures may not be entirely attributed to the development of appropriate observing responses. On the other hand, the fact that group D was not significantly superior to Group I should not be interpreted as inconsistent with the Kurtz (5) findings. It is not unlikely that the irrelevant stimulus pretraining developed observing responses that were appropriate to the transfer task, since the primary differences between

TABLE 3

ANALYSIS OF VARIANCE OF CORRECT RESPONSES IN 30 TRANSFER TRIALS

Source	*df*	*M.S.*	*F*	*p*
Pretraining (P)	2	99.86	3.29	.05
Age (A)	1	417.74	13.77	.001
P × A	2	25.78	<1.00	
Individuals	64	30.34		
Total	69			

the members of each pair of stimuli involved the same features (e.g., differences in hair, eyes, and nose.)

On the basis of available evidence, it appears that familiarization procedures designed to produce appropriate observing responses and those designed to produce distinctive verbal responses to the stimuli both contribute to positive transfer. It seems likely that in some experiments using the relevant-irrelevant stimulus paradigm, the observed positive transfer may be due to the combined effects of both factors.

SUMMARY

This experiment compared the performance of three groups of preschool children in a simple discrimination learning situation involving a pair of highly similar but discriminable pictures. The groups differed in pretraining experience. Group R had attached discrete names to the pictures used in the transfer discrimination task. Group D had learned to respond verbally with "same" or "different" when presented with these same stimuli. Group I had learned names for different control pictures.

The response measure was the number of correct choices in 30 trials of the transfer task. Analysis of the data showed that Group R performed significantly better than either Group I or Group D. Differences between these latter groups were not significant.

The results were in agreement with previous findings that the possession of verbal labels for the stimuli in a learning task will produce superior performance on that task.

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THE DEVELOPMENT OF INDEPENDENCE: A COMPARATIVE STUDY

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THE PROBLEM

The European who comes to the United States is surprised to find a more rapid social development in American children than he has been used to seeing in European children. In thought and action American children become independent of their elders at an earlier age than do European children. Not only do they depend less on adult guidance and judgment, but their consciences seem to mature earlier also.

Stendler (7) has indicated that the American mother unwittingly transfers some of the child's dependency from herself to his peer group at the preschool age, while the Parisian mother still thinks of him as "bébé," constantly needing her to teach him which kind of behavior she approves and which she disapproves. The American child learns to find satisfaction in the approval of his young playmates and strives to avoid their disapproval. Through parent interviews Stendler uncovered certain significant differences in educational goals between Parisian and American middle class mothers. The younger Parisian child is encouraged to be gentle, quiet, self-controlled; in other words, well-mannered and civilized; the older one to be self-sufficient, well-integrated and an individualistic thinker, which prepares him to become a typical Frenchman (7). Middle class American parents attempt to bring up children who will be independent of their parents. who will be accepted, practicing members of their own peer groups. [Note that this is achieved by substituting peer dependency for parent dependency (2).] Riesman (6) explains this difference: In all "inner-directed societies" as in Europe's "old middle class," parents try to bring about, through education, the internalization in their children of the parents' values and goals. The smaller child is pushed until he learns to "push himself to the limits of his talents and beyond," regardless of the possible conflict that his achievements might raise for him in his efforts to relate to his peers. Throughout childhood the parent remains the source of guidance. The child is brought up to believe in and respect the authority of his parents, teachers, and other surrounding adults who, as such, are held to be superior to him. The European parent remains omnipotent and omniscient. Thus Piaget (5) received many answers from Swiss children who believed that it was their father or grandfather who had created the

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world, the rivers, the mountains. European parents think it is wrong to let children realize that they—the parents—do not know everything.

In all "other-directed societies," to which the upper middle class of our large cities belongs according to Riesman, parents are no longer sure of their own values and standards. Due to the rate of change of our society, to social mobility, to immigration, the new generation no longer follows in its parents' footsteps. On the contrary, children are supposed to surpass their parents. As Mead reminds us, many a mother dreams of her son's becoming President of the United States. No longer can the parent feel superior to the child, but suffering from a lack of self-assurance, he does not wish to face the responsibility of directing the child. He believes that the child's contemporaries can advise better than his parents, that they know better what standards are important, what ideals and goals a youngster should have. Thus it is the peer group that has become the individual's source of direction, whose reactions have become important, whose approval must be obtained. Being popular with one's age group is a primary value. It is even more to be sought after than fame achieved through competitive activity. Social security has become one aim of education. The child, of course, senses the lack of self-confidence in his parents, he senses that the parents see in him at least a potential equal, if not a future superior. He realizes that the parents' knowledge is limited and that they, too, make mistakes. As a matter of fact, American parents, teachers, and other authorities feel that this realization is necessary for the sake of the children's feelings of security and early adult independence. Instead of learning to obey blindly, without questioning the adult's judgment, as one does in Europe, the child here is encouraged to use critical thinking in the hopes that his reasoning will become "autonomous" or "interiorized" as Piaget (4) calls this quality of objective, independent thinking.

Many an incident could be told by a person who has lived both in Europe and in the United States to give evidence of the differences in child development and behavior resulting from the respective differences in objectives and modes of training. A European child is a guest of his parents: a permanent guest, it is true, but one who will be asked to leave the dinner table if his behavior is not quiet and respectful. A European school child told this investigator that his father made the best pancakes when the fact was that the father, a scholar who was all thumbs in the kitchen or shop, would have difficulty boiling water. Contrast this with the American father who said that he believed he should treat his child as a potential equal (if not superior), and that their home belonged to children and parents together; or the director of a Congregational church school in Illinois, who, when asked by his five-year-old son if there was a God, though a firm believer himself, answered that some people believed in God, while others did not. He wanted his boy to decide independently in all matters possible, rather than to assume that his father was always right.

Good preschools in this country are geared toward an education for independent thinking as well as for group living. Perhaps because of the marked difference in educational aims, there are but few preschools in Europe. There the "bébé" is expected to look to his mother for guidance. It is held that he does not need to start his social education at such an early age. In our preschools children are encouraged to find their own solutions whenever they are able to, even if these are not as perfect as adults'. At a young age this is possible mainly in concrete, practical matters, be it in regards to their work or to social living. In most preschools there are fewer rules and regulations for the older than for the younger group. The older ones are supposed to make their own decisions. To give an example: There is usually a rule for the younger group, that rubbers or boots have to be worn outdoors on days when there are puddles on the playground. There often is no such rule for the older children. They have become old enough to realize that they must put boots on only if they want to play in puddles. They may choose to play where it is wet or where it is dry. Thus they may decide whether to wear boots or not.

Whereas the European school is concerned mostly with academic learning and little with cooperation or "character education"—the latter being the home's responsibility, a principal at an elementary school in Winnetka, Illinois, stated to the author that the school's primary functions are to teach children independent thinking and the skills necessary for living together. The teacher's role in this country is then, according to this informant, different from that of the European teacher. His obligation is to make the children realize that they are his potential equals. Children owe less respect merely to the teacher's role. They should be discerning enough to respect only a person who merits respect. Children should be made aware of the fact that their teachers sometimes err, and that their teacher's judgment is not always better than their own. Quite in contrast to the powerful European teacher, the more informal American teacher does not need to be feared and hated. He has become, in Riesman's words, a "peer-group facilitator and mediator."

Many observations in European and American schools give evidence of an earlier cooperation among children here. In Europe the child is often told to work individually; here, the children are encouraged to help each other, be it directly or by constructive suggestions and criticism. At an age when the European kindergartner uses "egocentric" speech, according to Piaget (3), the American one needs speech mainly for real peer communication.

A question which comes to the fore when studying differing rates of social development is whether, in a culture which values cooperation among children more than dependence upon adults, *social conscience* matures earlier due to stress on skills necessary for group life. Does the child's conscience remain "egocentric" longer in an inner-directed society than it does in an other-directed society? It is quite possible that the relatively early independence of the American child causes his conscience to develop not only from identification and interiorization of the ethical values of his parents, but also from the values of those of his peers to whom he has, in part, transferred his dependence. Is this "inner-directed child" older than his "other-directed" opposite number before he stops basing his moral judgments on the outcome of the subject's actions alone? As Piaget states, the young child is anxious to "expier par sanction" (to unburden his conscience of its sense of guilt by undergoing punishment). This atonement is relevant to his own needs only and is entirely unconnected with those of the victim. It is a childish expiation chosen in order to re-establish the offender's inner balance because his deed has "destroyed the equilibrium of the world." The worse the deed then, even though it be an accident and possibly due to excellent intentions, the more disagreeable must the punishment be to absolve the child's conscience. The question which we are raising here would also suggest that an "inner-directed child" must be older than an "other-directed child" before he bases his moral judgments not only on the effects of the deed but also on the feelings of the victim and on the offender's intentions.

One wonders whether these findings of Piaget are true for all children in the civilized world. There might be a difference in the rate of formation of the conscience as well as in its content when one compares children in the United States with those in Calvinist Switzerland. One might expect a different type of conscience here where education is directed outwardly rather than inwardly, where ideals, goals, and values are geared primarily toward social adjustment and not toward character improvement or toward perfection of the soul for the sake of salvation. Possibly the values of an outer-directed conscience are easier for a human being to achieve than are those of an inner-directed conscience. Perhaps this is another reason why the American child's conscience may become autonomous earlier. It requires less introspection. It is less inwardly turned in its self-evaluation, less self-concerned, less perfectionistic. Thus it becomes less destructive to his self-confidence, less guilt- and shame-ridden than is the conscience of the Swiss child who has been taught to struggle continually against his own tendencies toward wrongdoing. According to Riesman, however, Americans replace the inner-directed person's specific guilt feelings with diffuse anxiety, which he maintains is necessary to build up in the individual that emotional sensitivity to the feelings of others which will serve as a much needed facilitator of social adjustment.

PROCEDURE

This investigation grew out of an earlier study of the author's in which we used Piaget's "méthode clinique"—talking to individual children, telling stories, and asking questions designed to reveal their reasoning at different age levels. The original purpose of the research was quite different in nature from the study reported in this paper. At no time during the original investigation was it meant to be a comparative one. When the European data were gathered the author knew very little about the United States, its people, its culture, and its education. However, when gathering the American data in Winnetka, it became clear that significant comparisons could be made between children of the two cultures. The investigator has interviewed 261 children from kindergarten through high school, 80 Europeans and 181 Americans. In all, 12 stories have been used. This paper, however, reports on just two stories, used in elementary schools only.

Subjects

Europe: Twenty-nine French-speaking Swiss children, attending elementary school, which goes to tenth grade, in a rather run-down neighborhood in Geneva. United States: Forty American children, attending elementary school in Winnetka, a well-to-do suburb of Chicago.

One might wonder whether the results of this study were influenced by the difference in socioeconomic background between the children living in the United States and those in Geneva. However, results obtained, with the same stories, from 10 upper middle class German children living in Berlin were quite similar to those obtained from the Swiss children. This would seem to indicate that the phenomenon we are studying here is due more to the cultural structure of the society in which a child grows than it is to his socioeconomic class.

First Story—The Scoutleader's Birthday Party

"A group of children X years old (the subject's own age)" want to give a surprise birthday party to their scoutleader. One boy has accepted the responsibility of decorating the room. He wonders whom he could ask for advice." (The questions which follow are illustrative of the type used. Actually, in the "méthode clinique," the investigator probes and probes, formulating each question on the basis of the answer the subject has given to the preceding one; thus a uniform questionnaire is not employed. In the course of this probing the experimenter asks a large number of questions. The few here quoted are deemed sufficient to indicate the nature of the questions used.)

1. "Whom do you think he might ask?"
2. "He had thought of asking his home-room teacher, a whiz in English, history, and arithmetic, who knows nothing of art, or to ask another student who is so artistic that he has won a scholarship to the museum's art classes. Whom do you think he decided to ask?"
3. "He did ask both, and their advice differed. Whose advice do you think he followed?"
4. "He thought both ideas were equally good. Which one do you think he followed?"
5. "If he chooses the student's idea, will he be very embarrassed toward the teacher whose advice he did not follow?"

Second Story—Fight

"Two boys had a fight before school to see who was stronger. Louis hit Marc's nose which started bleeding profusely."

1. "How do you think Louis felt about it?"
2. "Louis felt guilty and wanted to get rid of his bad conscience. He knew that if he asked his teacher what to do the teacher would tell him to write one hundred times: 'I should not fight before school,' whereas another friend would advise him to give his favorite toy to Marc. Do you think he asked the teacher or the friend?"
3. "Why?"
4. "Louis went to Marc and Marc told him to forget the incident: 'In a fight one child is apt to get hurt,' he said, 'I might have hurt you just as easily.' When do you think that Louis no longer felt guilty, when Marc had told him that he had forgiven him, when he had written the pages for the teacher, or when he had given his toy to Marc?"

Results

First Story

Sixteen (or 69.5 per cent) of the 23 Swiss children, with whom the story was used in the above given form, all of them at least 10.3 years old, insisted that teachers and parents always give the best advice, even in matters of talent. Upon further insistence by the experimenter that it is the child who has the training particularly helpful for the scout, the Swiss children explained that adults know better because they have more experience. In the United States only three out of 40 children (7.5 per cent) preferred the teacher's advice to that of the gifted child and all three of these were six years of age. Whereas all but two Swiss children (91 per cent) imagined that the teacher would be angry if his advice was not followed, only six children in the United States (15 per cent) believed so—three were six years, two were seven and one was nine years of age. Most American children felt certain that the teacher would want the scout to follow the best advice, not necessarily the teacher's. The answers seem to show that Swiss children have less confidence in their peers than do children in America, that Swiss children continue, until a later age, to believe in the omniscience of adult authorities and to rely on their judgment, and that they are afraid of their teachers.

Second Story

Only seven out of the 40 American children (17.5 per cent) showed "egocentricity" of conscience as compared to 20 out of 29 Swiss children (69 per cent). Whereas in America only two six-year-olds (5 per cent) at first thought about their expiation through punishment (though afterwards they did consider the whole situation), there were 13 Swiss children (45 per cent), distributed through the whole range of age, who remained solely concerned about their own atonement; another seven (24 per cent) were in a stage of transition. For many Swiss children the teacher's punishment alone re-established the equilibrium of the world, which was destroyed by their deed. In contrast to children in America, most Swiss children do not doubt the wisdom of their teacher's choice of punishment. When the investigator put these children on "the spot," questioning the teacher's judgment, a number of them became ill at ease and rationalized the teacher's action, finding some reason to justify his advice.

Rather than give up his favorite toy one American boy (2.5 per cent) and seven Swiss children (24 per cent) chose the written work. Others hated writing so much that they preferred giving away the toy. Thirteen Swiss children (45 per cent) wanted to undergo both punishments or at least the one they disliked the most to be sure of expiation. Several of these children were 14 years of age or older. In contrast, not a single American child expressed such a wish. Many Swiss children were of the conviction that some adult ought to be told of the accident even though the boys could take care of it very well themselves. One American boy thought that Louis should feel guilty, because he had not reported his misbehavior.

Being told that Marc has forgiven Louis hardly changed the Swiss children's position on needing punishment to be relieved from guilt feelings. These children again thought of the accident only from the point of view of their own expiation. None of the American children saw a need for punishment in this case.

Obviously the American children show an earlier independence from the teacher and his judgment than do the Swiss children; rather than assent to his wisdom they see the accident with more objectivity and accept the idea either that Marc is right and no guilt feelings are necessary, or that relief from guilt should come by giving pleasure to the child whom they have hurt. Thus they can conform with peer judgment. Their conscience becomes interiorized and autonomous at an earlier age than does that of the Swiss children. It is also a different type of conscience as pointed out before.

SUMMARY AND CONCLUSIONS

Twenty-nine Swiss children and 40 American children from 6 to 15 years of age were studied by the "méthode clinique" to determine the differences in rate of social development and in content of conscience. The study appears to have uncovered evidence that, in certain areas of social development, the American child matures earlier than does the Swiss child. The American child seems to transfer his parent dependence to a peer dependence at an earlier age. One result of this earlier transferring appears to be that the American child's conscience becomes less egocentric and interiorizes earlier than does that of the Swiss child. There is, however, some indication that the content of conscience differs in these two types of societies. Whereas the American child's conscience is turned, primarily, toward social adjustment, the Swiss child's is geared toward character improvement.

Within the age range studied, this study seems to support the following conclusions: (1) American children are emancipated from their own adults at an earlier age than are their Swiss counterparts. (2) They are less subjugated to adults. (3) They are, rather, more dependent on their peers. (4) They enjoy freedom of thought and independence of judgment at an earlier age. (5) They develop earlier a more highly autonomous, though less complex, conscience.

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INVESTIGATION OF AREAS OF DISAGREEMENT IN SOCIOMETRIC MEASUREMENT OF PRESCHOOL CHILDREN

MARGARET JENNE DUNNINGTON[1]

Sociometric research has been concerned primarily with groups of school-age children. Yet no secondary group is more important to the development of a child's ways of interacting and, perhaps, his self-concept, than the earliest stable peer group, the nursery school.

Among the relatively few sociometric studies of preschool children there has been great disparity both in method and results. The purpose of this study was, therefore, to investigate areas of disagreement and omission by means of an adapted sociometric method which incorporates both choice and rejection into a single index of status.

Disagreements have arisen in every phase of sociometric research, among them the question of validation. In relation to the present investigation, an important point has been whether or not nursery school children have or can express preferences among their peers. The fact that subjects do respond has been adequate evidence for many investigators. Jennings (6) and Pepinsky (17) point out that sociometric choices, being direct measures of preferences, differ from many standardized tests, which are indirect measures of psychological processes, and thus require no validation against outside criteria. Other investigators, such as Hagman (5), Frankel (4), Moreno (11), and Emerson (3), have attempted a measure of validity by comparing verbal choices with observed contacts. Only Emerson, who used the adapted sociometric method employed in the present study, found a high degree of agreement between these variables. Both Hagman and Frankel found low correlations, but they came to differing conclusions: Hagman questioned the validity of sociometric testing on the preschool level; Frankel, on the other hand, believed that the two measures reflected two aspects of, rather than the identical, social phenomenon, pointing out that some children who had been chosen verbally were inaccessible on the playground. The same point of view was expressed by Emerson, who noted that "contacts" involved any observed interactions among children, including those not desired as well as those sought. Similar reasoning may explain the differences in results reported when teacher ratings of children's status were compared with the subjects' verbal choices. Koch (8) found a high positive correlation, while Lippitt (10), using the same methods, found a low degree of agreement.

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[1] This article is based on research conducted for a thesis which was submitted to Cornell University in partial fulfillment of the degree of Master of Arts (2). The writer wishes to express her gratitude to Dr. Mary Ford, who supervised the research, and to the staff of the University Nursery School, under the direction of Miss Mary Barrett.

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Secondly, there arises the question of consistency: Are preschoolers' verbalized reactions to their peers stable or merely expressions of the moment? There have been relatively few sociometric studies, of any age level, giving retest results; an exception is Northway's (14) reporting rank order consistency over a period of months in two studies of nursery school groups.

A third area of controversy concerns the ability of young children to differentiate levels of preference. Moreno (11) questioned this ability, observing that her subjects usually made a first choice but seemed unable to make second or third choices. Her findings may have been affected, however, by the wide age range of her subjects, from two to five years, and the fact that they had been together as a group only one month. Frankel (4) also concluded that her nursery school subjects did not discriminate among their preferences on the basis of comparing rank order results when weighted and unweighted scoring systems were used. Her analysis yielded a rank order coefficient of plus .98 between the rankings by the two methods. Both analyses were based on a sociometric method requesting only positive choices.

Differences in methods of securing and analyzing sociometric data have occasioned controversies over and misinterpretations of test results. Those researchers following the original Moreno (12) method present the patterns of choices through diagrams, or "sociograms," and define status in terms of individual position such as "star" or "isolate." Thompson, *et al.* (18), believe that such categorizations are more absolute than warranted by observation of actual contacts and that the variable, social acceptability,[2] should be thought of and expressed as a continuum, derived from various statistical and psychological data. A continuum of scores in rank order has been developed by Northway (13) by assigning weighted values to positive choices. Results are then described in terms of quartile ranks. Northway (15) found, however, that the children in the lowest quartile had only the common characteristic of being unaccepted; in behavior they ranged from recessive through socially uninterested to hostilely aggressive. Lemann and Solomon (9) attributed this result to the method of securing only positive choices; a more accurate grouping is obtained, they believe, through the incorporation of rejections. Similarly, Thompson and Powell (19) were interested in distinguishing between the "social nonentity" and the "socially rejected" child.

The incorporation of rejections has caused a reconsideration of terminology in describing the results of sociometric tests. When only positive choices were elicited, low scorers were sometimes labeled "rejected." Bronfenbrenner (1) and Northway (16), however, found that some subjects in the low status group, of a choice-only test situation, are "neglected" or

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[2] Northway (16) has pointed out that the term "acceptance" rather than "acceptability" should be applied to an individual's score, for his rank in one group cannot safely be predictive of his general acceptability in other situations.

"isolated" rather than "rejected." The differentiation of a rejected from "non-chosen" or "not noticed" child has been made in several adaptations of sociometric method with elementary, secondary, and college groups (7, 9, 19). In order to secure both choices and rejections from a preschool group, Emerson (3) asked the subjects whom they liked to play with and whom they didn't like to play with. Unlike the methods of previous investigators, "forced," or specifically elicited, choices were included to differentiate between those children who were disliked and those who were not noticed. This system, in which a single score derived for each subject is rank-ordered in a continuum, was utilized in the present study.

THE PROBLEM

The following questions, based on areas of disagreement, were investigated by the writer by means of Emerson's adapted sociometric method:

1. Are there demonstrable preferences among the preschool subjects?
2. Are the subjects' verbalized preferences stable?
3. Are levels of preferences differentiated by the subjects?
4. Does the use of a method which secures rejections result in status groups with different memberships from those obtained by the choice-only method?
5. Are high and low status children more "noticed" than the children in the middle status group?

SUBJECTS

The subjects of this study, the entire senior group of a college laboratory nursery school, were 15 children, seven boys and eight girls. Their ages ranged from four years one month to five years one month. All the children had been in attendance at least one semester previous to the term in which the study was conducted; four children had attended for two prior terms, three had been enrolled for three terms, one for four terms, and five had been in the group for five semesters before the study. The fathers of all the children were business or professional men.

PROCEDURES

Within a period of eight consecutive days each subject had an individual sociometric interview with the writer immediately after separation from his parent on arrival at the nursery school. A child was tested before he had joined his group for the day in order to elicit responses based on accumulated experiences rather than those occasioned by proximity or temporary reaction.

Rapport was initially established by introducing a simple puzzle for the child to assemble, the sociometric questions beginning when the child felt at ease. To secure the environmental set, the first question was, "What do you like to do best at Nursery School?" After accepting the response, the interviewer requested positive choices with the question, "Whom do you like to play with best in Nursery School?" To secure three choices, the child was asked, "Anyone else?" "Anyone else?" Rejections were requested in the same manner, with the question, "Whom in Nursery School *don't* you like to play with?" The subject was then asked whether or not he liked to play with each of the children whose names he had not volunteered, these being termed "forced" responses. The complete verbalization during the interview was recorded.

A retest was made in 60 days using the same procedures.

Numerical weights were assigned to the responses as follows: The first "spontaneous" choice and rejection each was given 14 points (plus for a choice and minus for a rejection), based on each child's having one out of 14 chances of being named first in the group of 15 children. Because some children gave two responses when asked "Anyone else?" it was necessary to distinguish between plural and single responses. Thus, 7 points, plus or minus, were given for second choices and rejections, and 5 points for third responses. If two responses were made together, each received the full value. "Forced" responses were given 1 point each, plus for "Yes" and minus for "No."

The positive and negative points received by each child were summed, giving him a single score which was then rank ordered with the scores of the other subjects. A division was made into three groups; the low group was composed of those children whose scores were below the first quartile, the middle group comprised the interquartile range, and the high group those above the third quartile.

FINDINGS

The findings are presented in terms of the questions raised earlier.

1. *Demonstration of Preferences*

Fourteen of the 15 subjects responded to the sociometric questions; all gave some spontaneous responses. Two children gave three spontaneous choices, as requested, while two subjects made four choices without additional solicitation; five children made two spontaneous choices; and five gave only one choice on the original test. For spontaneous rejections, five children gave three names; six gave two responses; one subject rejected only one child; and two children gave no negative responses. Twelve of the children made comments during the test in terms of giving reasons for their choices or rejections, adding emphasis or elaboration to their responses, or volunteering specific incidents about the child named. Examples of the recorded verbalization are as follows: "She has been away a long time," accompanying a spontaneous choice; "I guess I like him; I haven't played with him much," to a forced choice; and, with a rejection, "She doesn't like me one bit, so I don't like her!" Several stated, "That's all I like," or, "She's the only one I like best."

One child was absent during the first six days of the original test and present during the retest, yet the choices she received put her in the high status group on both tests.

Scores received by the subjects, as recorded in Table 1, ranged from plus 70 to minus 34 on the first test, indicating wide differences in choice behavior. The mean score for the entire group was plus 9.1 points. Means for the status groups were: high group, plus 44.0; middle group, plus 7.3; and low group, minus 22.5.

TABLE I

SUBJECTS' SOCIOMETRIC TEST SCORES AND RANKS

	Choice Points (plus)		Rejection Points (minus)		Total Points (disregarding sign)		Status Score		Rank	
	Test	*Retest*	*Test*	*Retest*	*Test*	*Retest*	*Test*	*Retest*	*Test*	*Retest*
Pat	70	30	0	0	70	30	70	30	1	3
Babs . . .	46	46	2	2	48	48	44	44	2	2
Sue	41	29	2	3	43	32	39	26	3	4
Don	26	67	3	13	29	80	23	54	4	1
Paul . . .	22	7	3	5	25	12	19	2	5	9
Fred . . .	21	8	4	4	25	12	17	4	6	8
Jane . . .	16	27	3	9	19	36	13	18	7	6
Ruth . . .	13	5	8	12	21	17	5	—7	8	10
Evie . . .	20	42	19	35	39	77	1	7	9	7
Bob	6	3	7	13	13	16	—1	—10	10	11
Mary . . .	13	23	16	2	29	25	—3	21	11	5
Alan . . .	3	2	9	14	12	16	—6	—12	12	12
Ken	11	27	32	43	43	70	—21	—16	13	13
Joan . . .	31	44	60	63	91	107	—29	—19	14	14
Dale . . .	33	32	67	86	100	118	—34	—54	15	15

The high percentage of response to the sociometric questions, together with the unsolicited explanatory verbalization, the recall of and response to absentees, and the wide range of scores give evidence that the subjects of this study not only had but could verbalize preferences.

An outside criterion was obtained through the Nursery School teacher's independent ranking of the children into three status groups. Her grouping was in 75 per cent agreement with the results of the sociometric test.

2. *Stability of Preferences*

The sociometric test procedure was replicated after 60 days. The rank order coefficient of correlation between the original and retest rankings was

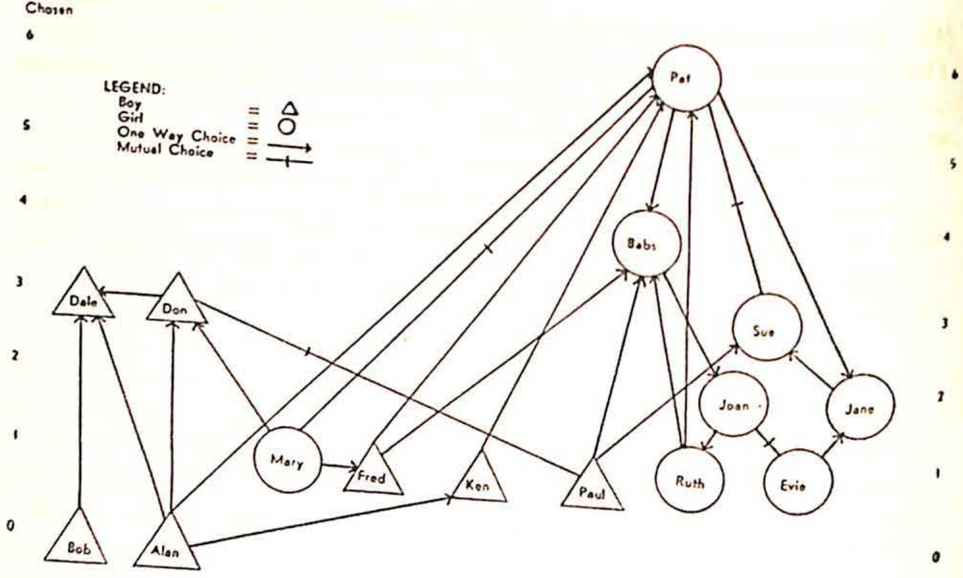

FIGURE 1—Sociogram of positive spontaneous and free choices—original test.

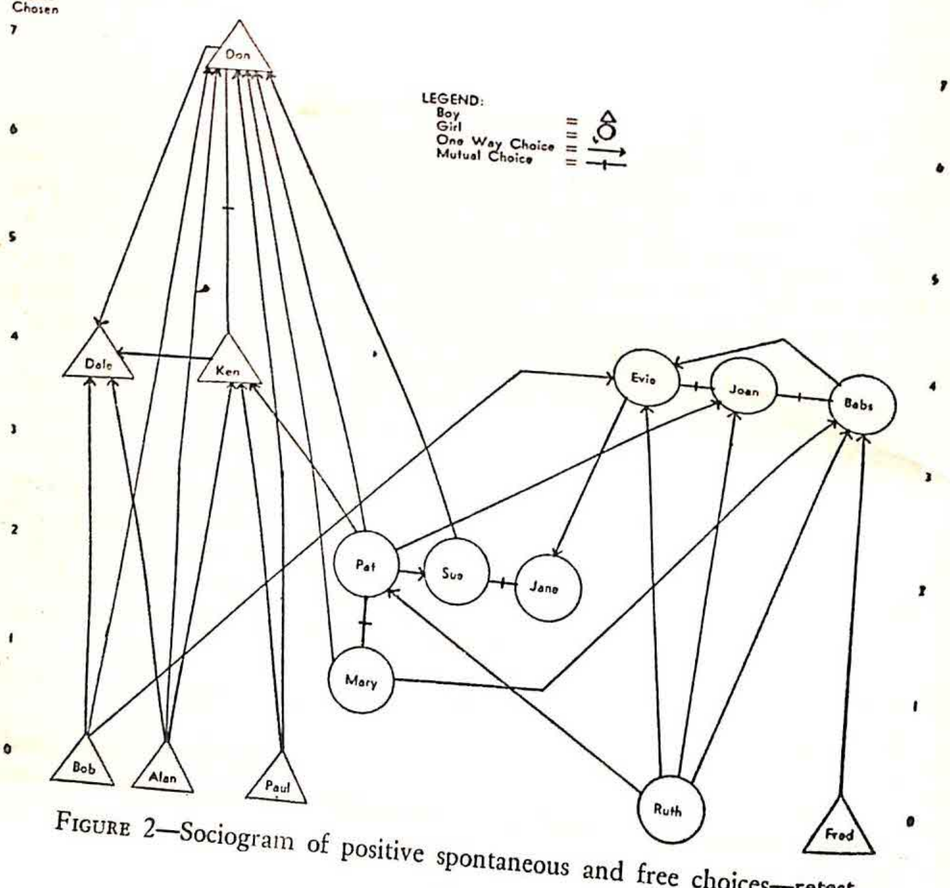

FIGURE 2—Sociogram of positive spontaneous and free choices—retest.

plus .86. The rankings of each child on both tests are listed in Table 1. The membership of the three status groups remained constant; although the rankings within the high and middle groups changed, the rank of members in the low group did not change.

It may be seen from the sociograms, Figures 1 and 2, that individual choices changed from the test to the retest, yet most subjects' relative positions in the group remained remarkably unchanged, when both choices and rejections were compiled. Therefore, among the subjects of this study, sociometric status, rather than individual preferences, was consistent.

3. *Differentiation of Levels of Preference*

Following the method used by Frankel (4), the writer compared the rank order of the subjects derived from the weighted scoring system used in this study with the rank order obtained when all choice levels were given equal value. Only 53.3 per cent agreement was found. Subjects were also ranked by arbitrarily weighting the choices and rejections 8, 6, 4, 1; agreement between this arbitrary system and the one used in the present study was complete with one exception: two children, at sixth rank, received identical scores. In this group, therefore, it seems that levels of preference do exist and are being measured by a choice-rejection test form and weighted scoring system.

4. *Comparison of Results Including and Excluding Rejections*

It can be seen from the sociograms, Figures 1 and 2, that when only choices are considered, the membership of the high status group would be greatly different. On the first test the high group would include Dale, whose total choice and rejection scores put him at the bottom of the low group on both tests. On the second test three low status children would appear as high group members. Although a cutting point for status groups would have been difficult to determine with the choice-only points, a number of children might have been accorded "low" status on the basis of their receiving only one spontaneous choice on the first test. Actually, however, several of these children, including Bob, who received no choices, were actually neither greatly rejected nor chosen; they were just "not noticed." Comparing the rank order obtained when only positive choices are considered with that found in this investigation results in a rank order coefficient of correlation of plus .53 for the first test and plus .39 for the retest.

When the choice-only method is considered, the group membership in the retest differs greatly from that of the original test. In the high group, only one child would rank high on both tests; only two are found in the low group on test and retest; and three out of seven remained unchanged in the middle group.

It is found, therefore, that there is a great difference between results obtained by the two methods and less consistency between test and retest groupings with the choice-only method.

5. *Comparison of "Notice" Scores*

When the total points, disregarding plus and minus signs, were considered, it was found that six of the eight children in the high and low status groups received considerably higher total scores than those in the middle group. As can be seen in Table 1, the two subjects (Don and Alan) who ranked nearest the middle group in the high and low group, respectively, had "notice" scores which fell within the range of scores of middle group members. The means of the "notice" scores for the three groups were: high group, 47.5; middle, 24.4; and low, 61.5. This suggests that high and low status children are found to be more noticed, spontaneously chosen or rejected, than those of the middle group.

DISCUSSION

The analysis of the data by both the choice-only and the choice-rejection methods resulted in great differences in terms of test-retest consistency, differentiation of preference levels, membership in status group and the consequent labeling of individuals. This strongly suggests that method may be a basic variable underlying areas of disagreement in sociometric research, and it is the conclusion of this study that sociometric status is not accurately measured by a system which does not include rejections and "forced" responses. For example, the securing of only positive choices in the Northway (15) study may have grouped within the low quartile those children who, in the choice-rejection system, would have been separated into the middle (or "not noticed") and the low (or "rejected") groups. The present findings may relate, also, to the discrepancy noted by Frankel (4): that those who received high status in terms of test choices were not observed to be the most chosen on the playground. In the choice-only analysis of the data in the present study some children appeared in the high group who, when rejections were also considered, ranked in the low status group.

The question of terminology, while clarified by the present study, is not satisfactorily resolved. While the terms "most chosen" for the high group, "not noticed" for the middle group, and "rejected" for the lows are more accurately measured by the choice-rejection method, some differences are still obscured. For example, some members of the middle group had moderately high "notice" scores, although the summing of positive and negative points ranked them in the middle status group. Some low group members were actually both highly rejected and highly chosen, the former outweighing the latter in terms of points.

Although not specifically measured by this study, several other factors may have affected results: namely, standardization of procedures to minimize transient responses and the testing of subjects whose period of acquaintance was relatively long term and who were within a one-year age range.

Further research is greatly needed to discover the behavioral variables related to choice or rejection by peers. It was found in the present study that, although individual choices and rejections changed from test to retest, the identical subjects comprised the three status groups. That many of the subjects were cognizant of others' reactions toward them was apparent from their recorded verbalizations during the test situation.

SUMMARY

The purpose of this study was to investigate certain points of disagreement in the area of preschool sociometric research. Data were derived from a study of 15 children, age four and five, attending a college laboratory nursery school. An adapted sociometric method was used which included a standardized interview situation; measurement of choices, rejections, and "forced" opinions; a weighted scoring system; expression of results in terms of individual scores rank-ordered in a continuum; and replication of the procedure after 60 days. For comparative purposes, three groups were designated: the low group consisted of those children who scored below the first quartile; the middle group were those children within the interquartile range; and the high group ranked above the third quartile.

Findings relevant to the problem areas investigated were as follows:

1. The subjects had and were able to verbalize preferences among their peers.
2. Individual statements of preferences changed but membership within status groups remained identical from test to retest. Rank within the high and middle groups shifted, but the low group subjects maintained their relative positions. The rank order coefficient of correlation between the original test and retest was plus .86.
3. The subjects of this study appeared to differentiate levels of preference.
4. Results derived by the present method differ from those of the "choice-only" method; the rank order coefficient of correlation between the two methods was .53 on the first test and .39 on the retest.
5. The majority of the subjects in the high and low status groups had higher "notice" scores than those in the middle status group.

There is evidence that the method used in this study brought out a fuller, and more consistent, sociometric group description than is obtained in the choice-only system.

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BEHAVIORAL DIFFERENCES OF SOCIOMETRIC STATUS GROUPS IN A NURSERY SCHOOL

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The purpose of this study was to investigate certain behavioral differences between those children who were most chosen and those who were most rejected by their peers in a nursery school group. The research was designed to provide quantitative measures of the behavioral and sociometric variables in order that the method might be applicable to other groups for replication and extension of the area of investigation.

It has been found by other researchers that young children do have preferences among their peers (4, 5, 9, 11), and both the present study and the Budden study reported by Northway (11) found that these preferences show a high rank order consistency over a period of months. There has been little agreement, however, about the characteristics of children who achieve high or low status in this earliest stable peer group experience. Most of the studies, including those of school age children, have investigated the relationship of sociometric status to background factors, such as propinquity, age, and family data (2, 4, 6), or to personality variables such as intelligence, behavior within the group, and motor abilities (4, 5, 7, 8, 9). The behavior variables have been measured primarily through observation of a group in a nonstandardized setting, with the exception of Moreno (9), who observed interaction between experimental pairs. No reports were found in which individual performance measured in a controlled experimental situation was the dependent variable. In order to meet the need both for method and information the present study was undertaken, utilizing a set of play materials for the experimental medium.

THE PROBLEM

It was hypothesized that significant differences would be found between children of high and low sociometric status in various aspects of their aggressive, imaginative, and verbal behavior when measured in a stand-

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[1] This article is based on research conducted for a thesis which was submitted to Cornell University in partial fulfillment of the degree of Master of Arts (3). The writer wishes to express her gratitude to Dr. Mary Ford, who supervised the research; Miss Shirley J. Heinze, partner in the play experiment; and the staff of the University Nursery School, under the direction of Miss Mary Barrett.

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ardized situation. Specifically, the following aspects and directions of the variables were hypothesized:

1. *Aggression.* It was expected that all subjects would behave aggressively, but that statistically significant differences would be found in the type and direction as follows:

a. The proportion of positive affect to negative or aggressive affect would be greater among the high status group than the low status children.

b. The proportion of aggression which was specific as to origin and object would be greater in the high than the low status group.

c. The proportion of aggression which occurred within the context of an ongoing, goal-oriented theme would be greater for the high than the low status children.

2. *Imaginative use of materials.* It was expected that all subjects would use the play materials in some sort of design or active play, but that they would differ in their emphasis as follows:

a. The proportion of their physical nonthematic use of the materials in which organization was realistic would be greater in the high status group than in the low.

b. The proportion of nonthematic play which was mere handling of the objects without relationship to other materials would be lower in the high group than in the low group.

c. The proportion of their thematic play with the materials which was within the context of ongoing, goal-oriented themes would be greater for the high status than the low status children.

3. *Verbal interaction with adult.* It was expected that all subjects would talk with the adult during the experiment, but that they would differ in purpose, spontaneity, and response.

a. The proportion of their verbalization which was directed toward seeking interaction with the adult would be smaller for the highs than for the lows.

b. The proportion of their verbalization which was spontaneous, or unsolicited by the adult, would be greater for the highs.

c. The proportion of the adult's verbal stimulation to the child which was rejected by the child would be lower in the high than the low group.

SUBJECTS

The subjects of the study were 15 children, seven boys and eight girls, comprising the senior group of a college laboratory nursery school. The age range at the time of the study was four years one month to five years one month. All the children had been in attendance at least one semester previous to the term in which the study was conducted; four subjects had attended for two prior terms, three had been enrolled for three terms, one for four terms, and five had been in the group for five semesters before the study. The fathers of all the children were business or professional men.

PROCEDURES

The Sociometric Test

Sociometric status was derived by the interview and scoring methods developed in the Department of Child Development and Family Relationships at Cornell University; these methods were adaptations of the original Moreno (10) sociometric technique. In individual interviews the subjects were asked to name children in their group whom they "like best to play with" and whom they "don't like to play with." By asking "Anyone else?" "Anyone else?" the interviewer attempted to secure three choices and three rejections from each child. The subject was then asked whether or not he liked to play with each of the children who were not spontaneously mentioned. The subjects' complete, and often ingenious, responses were recorded. In order to secure responses of accumulative rather than temporary nature, subjects were interviewed immediately upon their arrival at the nursery school before they had seen any other children.

A retest was conducted using the same procedures 60 days after the original set of interviews.

The scoring procedure consisted of assigning weighted values to the responses. This procedure assumed that the subjects expressed levels of preferences and was based upon the writer's experience that the majority of children gave explanations for their rankings and considered their replies carefully. In addition, subsequent comparison of the rank order resulting from the weighted scoring with that from using equal values for all responses showed only a 53 per cent agreement between the two systems.

The following weighted values were used. A first choice and rejection received 14 points, plus for a choice and minus for a rejection, based on the premise that in the group of 15 children each had one out of 14 chances of being chosen first. The second choice or rejection received 7 points, plus or minus. The third choice was given only 5 points because some subjects added spontaneously, a fourth choice, which was given 3 points. The specifically elicited or "forced" choices were each given 1 point, plus or minus.

A single score was found for each subject by summing the positive minus the negative points he had received. The subjects were then rank-ordered and the group divided into three status groups, high, middle, and low.[2]

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[2] Additional details concerning procedures can be found in the writer's thesis (3).

The Play Experiment

Fourteen of the subjects participated in the play experiment. Each child had three sessions with a specially constructed set of 60 semirealistic wooden toys, including people, animals, buildings, vehicles, trees, and fences, to which was added a commercial flexible-bodied doll family. The toys were presented, unorganized, in a large, flat box. The first session, of 10 minutes' duration, was intended to familiarize the subjects with the toys and the setting; although it was recorded, this first run was not included in the analysis. The second and third sessions were 20 minutes in length. All sessions were held in a minimally furnished room in the presence of the experimenter and the observer. The time interval between sessions was, with a few exceptions, one week, each subject being taken from the nursery school at approximately the same hour for all three sessions. A verbal record was secured by tape recording.

The experimenter's interaction with the child was predominantly nondirective, responsibility for the play being solely with the child. The adult's comments fulfilled three purposes: to create an accepting atmosphere, to secure the child's verbalization of his play when it was not spontaneously given, and to attempt to keep his attention focused on the materials when he became tangential. The observer avoided interaction, insofar as possible.

Initial structuring for the child was given en route to the experimental room and consisted of telling him that there were some new toys for him to play with while the experimenter and the observer did their work. He was also told that he would have only a short time to play that day but could have longer another time. In the experimental room the toys were pointed out and the child was told that he could play with them now as he wished. One minute before the end of the session the experimenter stated that she was almost through with her work and that they would return to the nursery school shortly. No child was forced to remain for the full period, although he was given encouragement to continue his play, and all children were permitted to effect closure if they desired.

Observations were recorded on score sheets in predetermined categories. Resembling those of Bach (1), the categories were developed from analysis of stenographic records of pretest subjects' play behavior and were designed to cover all the subjects' actions and verbalizations. One group of categories dealt with the physical use of the materials: exploration, abstract organization, realistic organization, placement, manipulation, generalized thematic, routine thematic, original thematic, and nongoal thematic. The remaining categories covered the child's interaction with both materials and adult in terms of giving or seeking, accepting or rejecting: attention, help, information, instruction, permission, structuring, positive affect, attacking, blocking, criticism, threat, tangentiality, withdrawal, closure, and negative affect. The categories used for recording the experimenter's verbalizations were: acceptance, elaboration, focus, direction, information, help, assignment of responsibility, and criticism.

All the materials were given codes for ease of recording. Each behavior unit, defined as a change in direction of ongoing activity or object, verbal or manipulative, was recorded by putting the material code in the appropriate category row on the score sheet. Direction was designated in the interaction categories by coding the initiator of the behavior, the type of interaction (giving, seeking, accepting, or rejecting), and the object or recipient. Each new score appeared in a new column, and an additional score was given for an activity which continued for more than 15 seconds. Scores in most of the interaction categories were double-coded with scores in the materials categories. For example, a score in the "attacks" category row might have been entered in the same column with the object codes AB (bear) and PG (girl) in the original thematic category row. Activities which were verbalized were designated by a check mark.

The number of entries in each category was totaled for each subject's two full-length sessions. Measures of the variables as set forth in the hypotheses were derived from combining related categories and scoring subcategories according to scoring conventions defined below. These quantitative measures were then expressed in terms of ratios which were computed for each subject and were treated as scores for the analysis.

Variables

1. *Positive Affect*
   Total Aggression
2. *Specific Aggression*
   Total Aggression
3. *Thematic Aggression*
   Total Aggression
4. *Realistic Organization*
   Total Nonthematic
5. *Explore, Place, and Manipulate*
   Total Nonthematic
6. *Routine and Original Thematic*
   Total Thematic
7. *Seeks Interaction*
   Total Verbalization
8. *Unsolicited Verbalization*
   Total Verbalization
9. *Rejection of Stimulation*
   Total Adult Stimulation

The following conventions were used in scoring subcategories and combining existing categories:

1. Total Aggression was the sum of scores in the categories Attacking, Criticism, Disorganization, Threat, and Negative Affect.
2. Specific Aggression was scored when the code in one of the Aggression categories indicated that the aggressive act had been performed and received by single objects or units (ex., car hitting policeman doll).
3. Thematic Aggression included those Aggression scores which occurred in the same column with a score in a Thematic category (ex., mother doll spanking child doll double-coded in Attacking and Original Thematic categories).
4. Total Nonthematic was the sum of scores in the Nonthematic cate-

gories Exploration, Placement, Abstract Organization, Realistic Organization, and Manipulation.

5. Total Verbalization was the sum of checkmarks.
6. Unsolicited Verbalization was scored when the checkmark was not preceded by any score in the Adult categories, or when preceded by a score in the Adult categories of Acceptance, Giving Information, and Giving Help.
7. Stimulation scores were those recorded in the Adult categories of Seeking Elaboration, Focus, Direction, and Information, and Assignment of Responsibility.
8. Rejection of Stimulation was composed of scores in the following sequences: Tangential score following Adult Stimulation, a nonverbal score following Adult Elaboration or Seeking Information, or child's response of "No" following Adult Stimulation.

Mean scores and standard deviations were computed for each sociometric status group on each experimental variable, and the differences between the means of the high and low groups were tested for significance using the *t* test.

Reliability

A retest of the sociometric study was conducted two months after the original set of interviews. The rank order coefficient of correlation between the two tests was plus .86. Status group membership remained identical, although there was some shifting of relative position within the high and middle groups.

Reliability of the observations of the play sessions was determined by the experimenter's recording simultaneously with the observer for the first five minutes of each play session. Analysis of the two sets of records showed that agreement on category placement of each unit of play recorded by both persons was 87.9 per cent, while the agreement on all units, some of which might have been missed by one or the other, was 71.0 per cent. Reliability was computed for the Adult categories in the same manner, yielding 91.7 per cent and 81.8 per cent agreement, respectively.

FINDINGS

Analysis of the mean scores on all variables yielded differences in the directions hypothesized. The means, standard deviations, and levels of significance are listed in Table 1. For the three Aggression variables and the three Verbalization variables, the differences between the high and low groups were significant above the 5 per cent level of confidence, while the three variables concerned with the Imaginative Use of Materials differentiated between highs and lows only at the 10 and 20 per cent levels and thus did not meet the criterion of significance.

TABLE 1

MEANS AND STANDARD DEVIATIONS OF SCORES ON EXPERIMENTAL VARIABLES FOR CHILDREN IN HIGH, MIDDLE, AND LOW SOCIOMETRIC GROUPS AND LEVEL OF SIGNIFICANCE FOR DIFFERENCES BETWEEN HIGH AND LOW GROUPS

	All Subjects		High Group		Middle Group		Low Group		
Variables	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Level of Significance*
Positive Affect to Total Aggression	.15	.18	.19	.06	.23	.21	.00	.00	.01
Specific Aggression to Total Aggression	.38	.62	1.00	.00	.74	.22	.26	.09	.001
Thematic Aggression to Total Aggression	.41	.30	.70	.10	.56	.15	.03	.05	.001
Realistic Organization to Total Nonthematic	.41	.41	.43	.08	.51	.22	.23	.13	.10
Explore, Place, Manip. to Total Nonthematic	.45	.18	.37	.04	.39	.16	.63	.20	.20
Routine & Original Thematic to Total Thematic	.63	.28	.85	.14	.64	.18	.39	.28	.20
Seeks to Total Verbalization	.22	.13	.11	.04	.20	.13	.34	.03	.001
Unsolicited to Total Verbalization	.63	.18	.76	.06	.63	.23	.55	.05	.01
Rejection to Total Stimulation	.49	.19	.36	.13	.46	.17	.68	.12	.05

Other findings give added support to the differences in behavior when status groups are compared. The mean scores for the three status groups are in rank order on seven of the nine variables, the middle group mean being between those of the high and low groups. On the two variables, Positive Affect to Total Aggression and Realistic Organization to Total Nonthematic, the mean of the middle group is the highest value. Comparisons of the standard deviations of each group on each variable indicate the trend toward homogeneity for the high and low status members, with the middle group showing greater variability. On seven of the variables, the standard deviation of the middle group markedly exceeds that of both the high and low sociometric groups. On two of the variables, Manipulate, Place and Explore to Total Nonthematic and Routine and Original Thematic to Total Thematic, the standard deviation of the middle group is less than that for the low status group. However, neither of these variables significantly differentiated between the highs and lows.

Discussion

The findings of this research indicate that there are differences between the most chosen and the most rejected children in the group in terms of their aggressive and verbal behavior in experimental play situations. Although the high status children do exhibit aggression in their play, they show a greater proportion of positive expression than do the low status children. There seems to be a greater tendency for the high group to express their aggression within the context of thematic play and to have definite, single doers and recipients of the aggressive acts, when compared with the low status members. The high children have a lower proportion of their total verbalization directed toward drawing the adult's attention to themselves and a higher proportion of self-initiated verbalization than do the low status subjects. Although the low group members seek a greater proportion of attention, they reject, to a greater degree, the adult stimulation given them.

It would seem that the aggression and verbalization variables differentiate in this population between children of high and low sociometric status. However, the variables measuring imaginative behavior were all below the level of significance, indicating either the need for refinement of the variables or the possibility of no difference.

Summary

The purpose of this study was to determine whether statistically significant differences in aggressive, imaginative, and verbal behavior could be found between a group of high status children and a group of low status children in a nursery school. Two standardized situations were developed to derive quantitative measures of the behavior of 14 four- and five-year old children:

1. A sociometric test in which a full measure of status was secured through choices, rejections, and forced opinions, and
2. Three experimental sessions for each child with a set of semirealistic play materials during which behavior was recorded in terms of predetermined categories.

Numerical weights were accorded the various choices and rejections received by each subject to derive sociometric scores, which were then rank-ordered and divided into three status groups, high, middle, and low. Behavior scores were derived for each subject by totaling the units recorded in each category observed in the play experiment, developing ratios to test the hypotheses, and computing means for each sociometric status group. The means of the high and low groups were tested for significant differences.

Differences between the mean scores of the high and low status groups were in the directions hypothesized. These differences were statistically significant for the three variables measuring aggressive behavior and the three variables measuring verbal interaction but did not meet the test of significance for the three measures of imaginative behavior.

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THE LATER CAREERS OF BOYS WHO WERE EARLY- OR LATE-MATURING

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A previous study (7) compared two groups of boys who had been classified as physically accelerated or retarded, in terms of skeletal age. These groups represented approximately the 20 per cent at each extreme of a normal public school sample. The comparison showed differences in physical growth, sexual maturing, and in a number of psychological measures, and led to the conclusion that ". . . those who are physically accelerated are usually accepted and treated by adults and other children as more mature. They appear to have relatively little need to strive for status. From their ranks come the outstanding student body leaders in senior high school. In contrast, the physically retarded boys exhibit many forms of relatively immature behavior: this may be in part because others tend to treat them as the little boys they appear to be. Furthermore, a fair proportion of these give evidence of needing to counteract their physical disadvantages in some way—usually by greater activity and striving for attention, although in some cases by withdrawal" (p. 146).

It is clear that early- or late-maturing may have a considerable bearing upon the social life and personal adjustment of some individuals during the middle years of their adolescence. Perhaps of greater importance, however, is the inquiry as to longer-term effects or relationships in adult life, and on this point no evidence has previously been offered.

The subjects who participated in the original study are now in their early thirties. Contacts have been maintained with many of the group during the intervening years; in a systematic follow-up study[1] beginning in 1954 current data have been obtained for 20 of the early- and late-maturing boys, out of an original sample of 32.

ADOLESCENT DIFFERENCES

Figures 1 to 7 present data from the adolescent period for the original groups, and for the subsamples available in the present study. Figure 1 shows the distribution of skeletal ages (at around chronological age 17)

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[1] Acknowledgements are due to the U.S. Public Health Service for a grant in support of this study. The follow-up study was a joint project of the Institute of Child Welfare and the Donner Laboratory.

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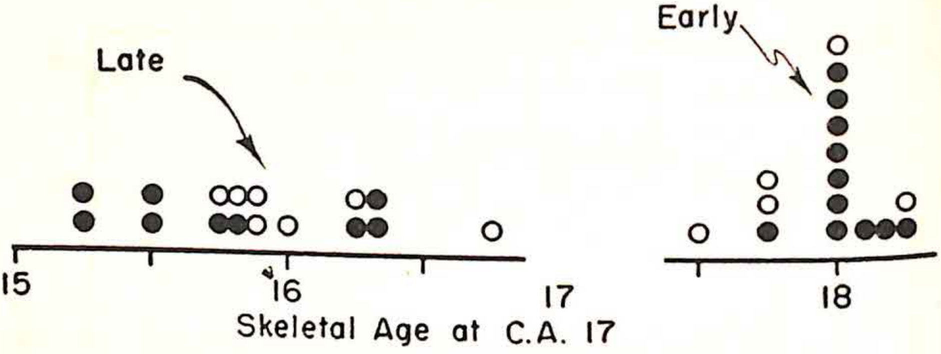

FIGURE 1—Skeletal ages at 17 years, of the late- and early-maturing.

for the early- and late-maturing. Each circle represents an individual case: the black circles those included in the follow-up and the open circles those who have dropped out.[2] It can be seen that the new selection has not substantially altered the maturity differential of the two groups.

Figures 2 and 3 present cumulative records for height and weight in terms of standard scores at ages 12 to 17. Standard scores (in which 50 is taken as the mean and 10 as the SD) are indicated on the left vertical axis, and percentiles on the right. In these and the following figures, the points on connecting lines represent averages for the follow-up group, consisting of 11 early- and 9 late-maturing individuals. The adjacent points denote averages for the original 16 early- and 16 late-maturing.

The early-maturing tend to fall at the 75 percentile or above, and the late-maturing at the 25 percentile or below, with differences which are at a maximum at around 14 years, when the early-maturing are on the average approximately 8 inches taller and 34 pounds heavier.

In these physical measures the adolescent data for the follow-up sample are similar to those of the original sample, and this is also shown in Figure 4, based on a measure of static dynamometer strength (right grip).

Other physical comparisons included Greulich's (6) 5-point standards of maturity (rated by physicians from pubic hair and external genitalia) and Bayley's ratings of androgeny (1). On the Greulich scale the late-maturing boys at age 14 averaged only 2.0, well below the norm; while the early-maturing averaged 4.5, or close to the scale maximum. In the androgeny assessments, the early-maturing were nearly all in the "masculine" or "hyper-masculine" zone, while approximately half of the late-maturing were classified as "asexual," "bisexual," "hypo-bisexual," or physically "dis-

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[2] Skeletal age was assessed from X-rays of the hand and knee, using Todd standards. Of the 12 cases lost from the original sample, three have died, one has not been located, one is non-cooperative, three have been scheduled but not yet seen in the follow-up and the remaining four have moved away and are for the time being unavailable because of residence abroad, or in other states.

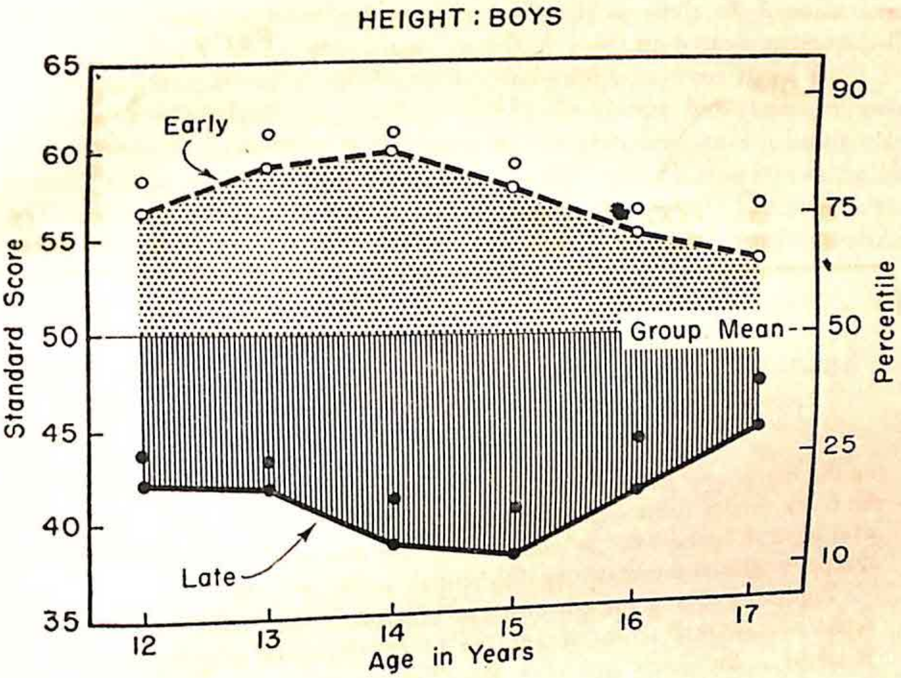

FIGURE 2—Height comparisons for two contrasting groups.

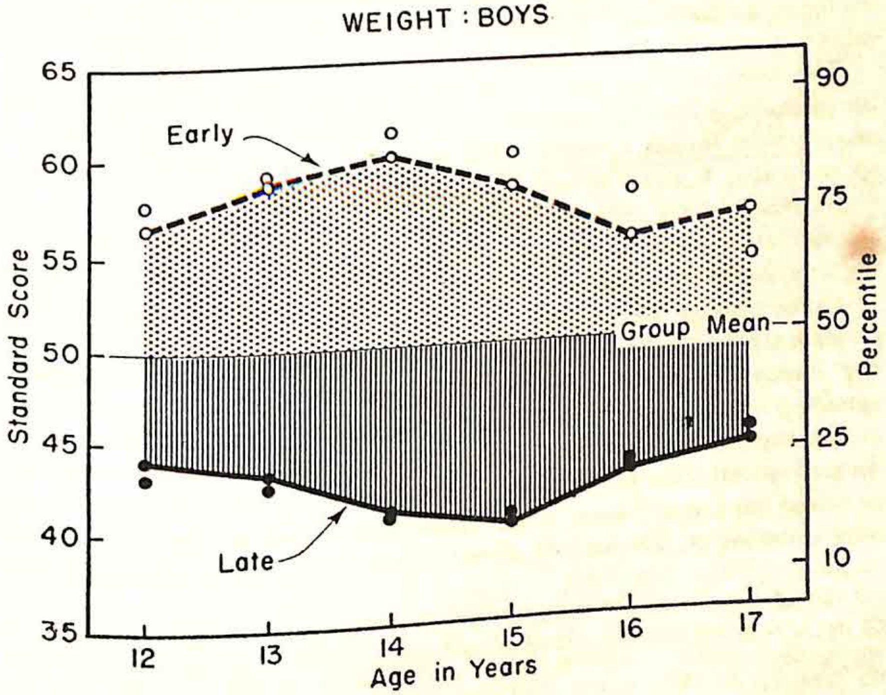

FIGURE 3—Weight comparisons.

harmonious." In these as in other respects the follow-up samples yielded distributions similar to those of the original study.

With such marked adolescent differences in size, strength, masculine conformation, and associated athletic abilities, we might also predict, in our culture, average differences in reputational status and in some aspects of self-acceptance. In the original study comparisons were presented, at an average age of 16, for a series of ratings made in "free play" situations. The early-maturing were judged to be more attractive in physique and as showing more attention to grooming. They tended to be more relaxed, more matter-of-fact and less affected in their behavior. Differences were significant at the .05 level for each of these traits; for a number of other characteristics, such as interest in the opposite sex, and "good-naturedness," quite consistent differences were obtained over nine semesters of observation. The late-maturing were significantly more expressive, but their small-boy eagerness was also associated with greater tenseness and more affected attention-seeking mannerisms.

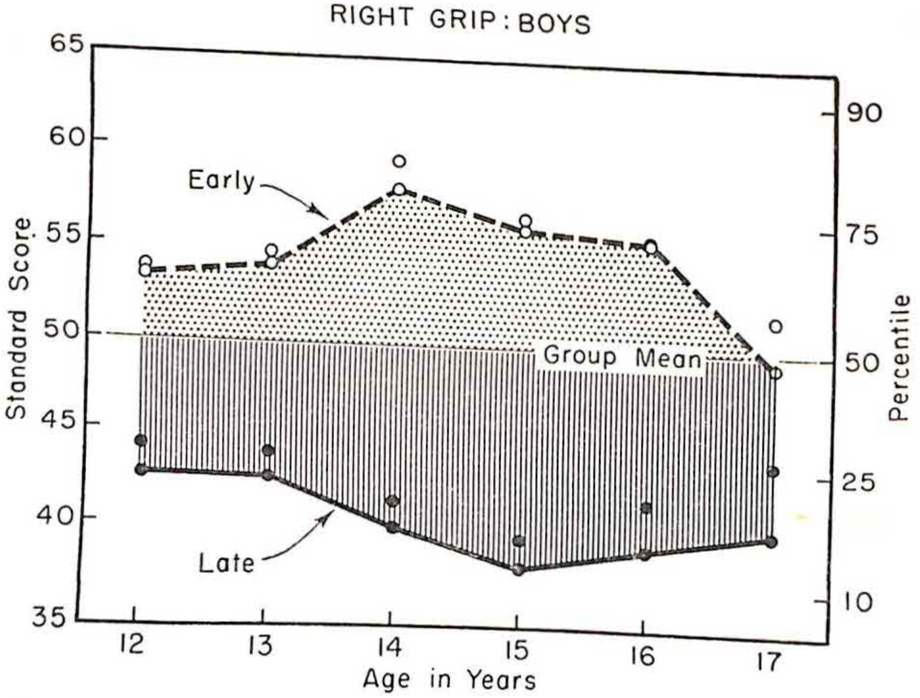

FIGURE 4—Strength comparisons.

Figure 5 represents average measures for attractiveness of physique, based on independent ratings by three staff members. Figure 6 gives similar cumulative records for an illustrative aspect of expressive behavior (eagerness). The early-maturing are centered close to the average in this charac-

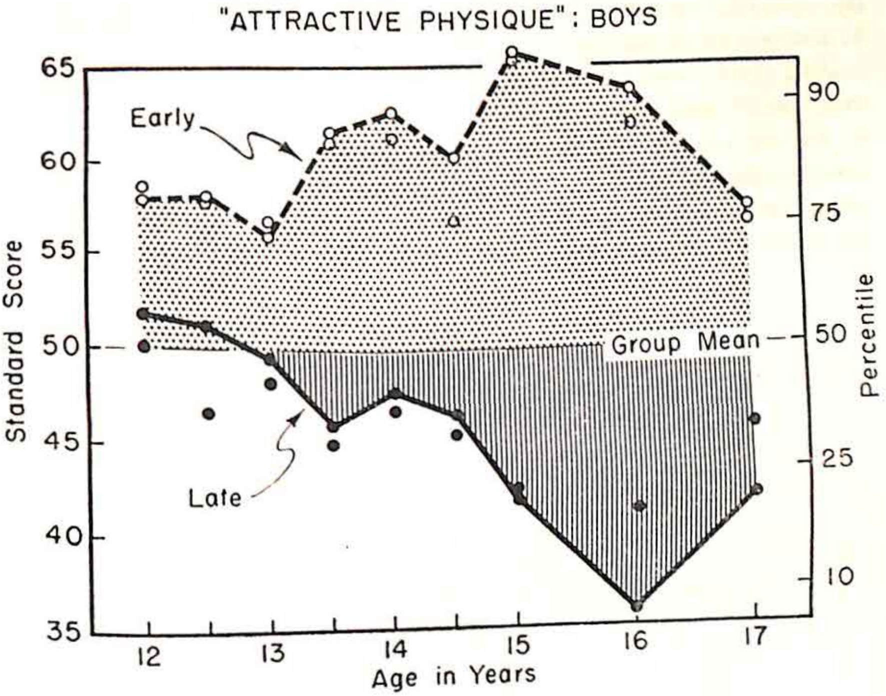

FIGURE 5—Comparative ratings of "attractive physique."

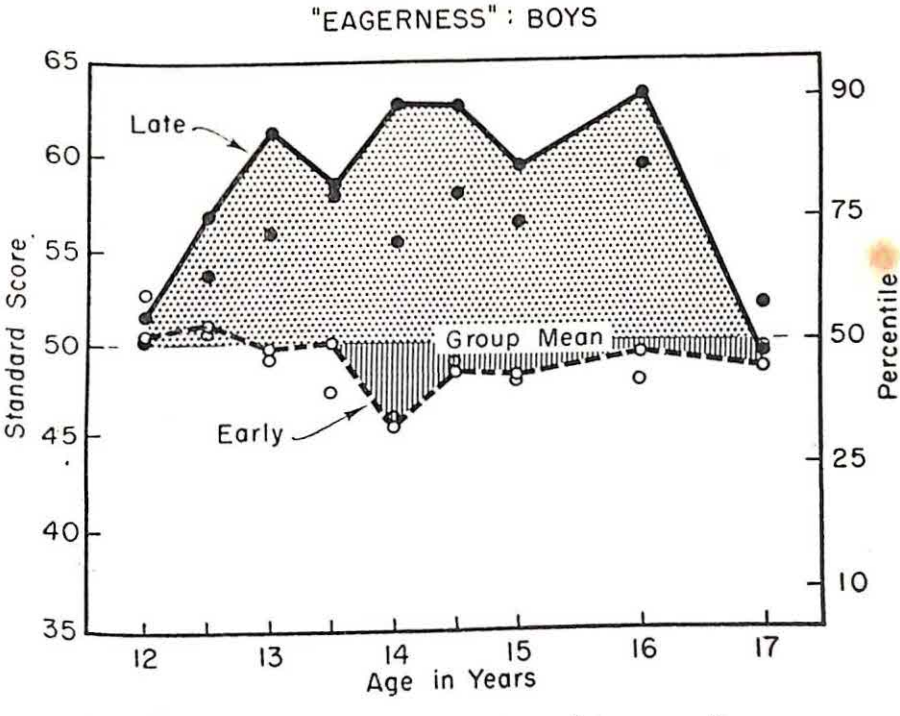

FIGURE 6—Comparative ratings of "eagerness."

teristic while the late-maturing are judged to be more juvenile and less poised in their expressiveness, especially in the middle years of adolescence. Similar results were found for such characteristics as "animated," "talkative," and "uninhibited."

On behavior items suggesting a large component of self-acceptance (being relaxed, unaffected and matter-of-fact) the early-maturing were rated higher at the end of the study, with the late-maturing becoming increasingly "tense" and "affected" in the high school years.[3] Figure 7 illustrates this for the characteristic which we have called "matter-of-fact." Both groups fluctuate around the average in this trait until age 16 when they separate noticeably, the early-maturing falling on the favorable or well-adjusted side, and the late-maturing on the attention-seeking or show-off side of the scale. Similar wide separation at ages 16 and 17 has been found for the trait "unaffected-affected" and for "relaxed-tense." In these, as in other relevant psychological measures, the follow-up groups had adolescent records similar to those of the original study; the loss of cases has not substantially changed the selection.

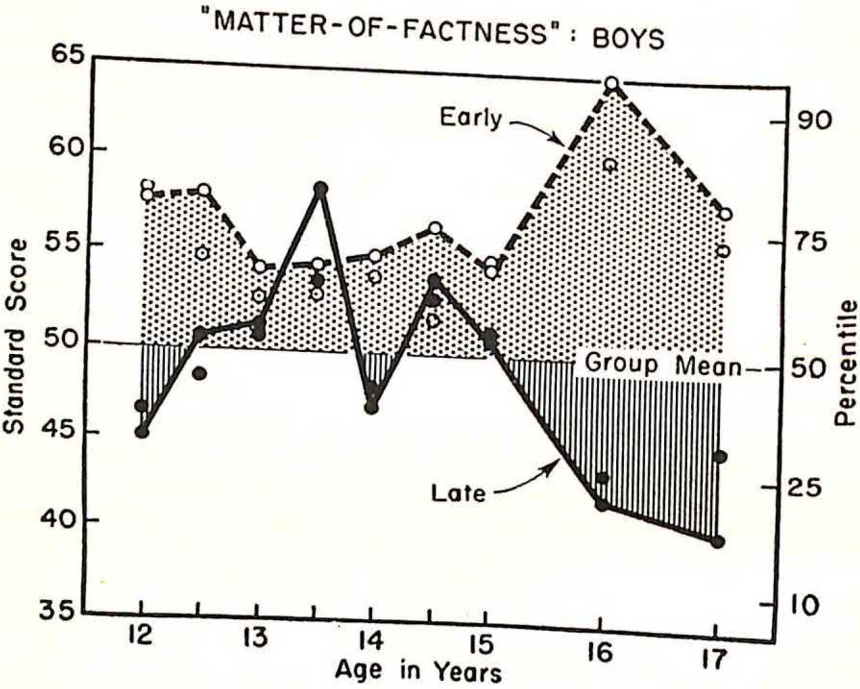

FIGURE 7—Comparative ratings of "matter-of-factness."

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[3] A study of the Thematic Apperception Test responses at age 17 suggests that early-maturing boys tend to be more self-accepting and to feel less threatened than late-maturing. These data will be presented in a forthcoming article by Paul H. Mussen and Mary Cover Jones.

Adult Differences

We may now consider the adult characteristics of the early- and late-maturing, as observed at an average age of 33 years. As was predicted at age 17, the differences in gross size tend to disappear. The early-maturing average only half an inch taller, at 5 feet 10 inches; and 7 pounds heavier, at 172 pounds. These differences are not significant. In body build, the prediction is that the early-maturing would be more mesomorphic. The tendency is in this direction, but the differences are not significant. The chief thing to note is the wide range of physiques within each group (both in adolescence and in adulthood) and the marked consistency over the years. A slight change is apparent in the direction of greater mesomorphy in eight of the nine late-maturing and they now present a somewhat more developed and sturdy appearance.

Some differences would be expected in constitutional indices of masculinity. Among the late-maturing, the majority of the original study and of those included in the follow-up were rated as having a deficiency in masculine development, at age 17. At age 33, however, Sheldon ratings of gynandromorphy (8) in the two groups showed considerable overlap and only a small and nonsignificant difference in favor of the early-maturing.

Personality differences in adult life have been examined with reference to a number of criteria. Two sources of data to be considered here are Gough's California Psychological Inventory and the Edwards Personal Preference Schedule. The first of these, the C. P. I., attempts to appraise aspects of character and temperament which are significant for social living and interpersonal behavior and which are related to personal maturity and creative achievement. Eighteen scales are available which describe individuals in terms of social responsibility, tolerance, flexibility, academic motivation, self-control[4] and the like (3).

Most of the above scales did not show significant differences between the groups. One outstanding exception is the scale entitled "good impression," (interest in, and capacity for, creating a "good impression" on others)(4). Differences here favored the early-maturing with a significance at the .006 level.

Some of the interpretative phrases associated with high scores on this scale include: "is turned to for advice and reassurance; fatherly; is concerned with making a good impression; is persistent in working toward his goal." High scorers on this "Gi" scale are also designated as responsible, cooperative, enterprising, sociable and warm.

In our groups the early-maturing tend in addition to obtain higher scores on the C. P. I. scales for socialization, dominance, self-control and responsibility. Although none of these shows differences at a significance level better than .07, it is true that the early-maturing have high average scores and present a consistently favorable personality picture with regard to these important social variables.

---

[4] "Self-control" is indicated by a low score on the impulsivity scale.

The phrases and adjectives associated with high scores on these five scales (good impression, socialization, dominance, self-control, and responsibility) remind us strikingly of the social behavior and personal traits attributed, by their peers and by adults, to the early-maturing boys in adolescence. For the total group of 43 boys thus far included in the follow-up, a correlation of .50 (significant at the .01 level) was found between the "good impression" score on the C. P. I., and their level of skeletal maturity 18 years earlier. The corresponding Pearson r for the socialization[5] score at age 33, and skeletal maturity at age 15, was .40, significant at the .01 level. For these correlations skeletal quotients were computed (skeletal age over chronological age), to make allowance for slight differences in the age at which the skeletal X-rays were obtained.

One other scale yields an interesting difference, significant at the .05 level. This is the scale for what has been termed "flexibility." Those who score high on this scale are described by Gough as tending to be rebellious, touchy, impulsive, self-indulgent, assertive, and also insightful. Low scorers are described as deliberate, methodical, industrious, rigid, mannerly, overly-controlling of impulses, compliant. In these terms, the late-maturers tend to be more "flexible" than the early-maturers.

We might hazard the guess that some of the little boy behavior—the impulsiveness, playfulness and also the "touchiness" repeatedly noted in late-maturing adolescents is mirrored in the description of high scorers on this scale. We might speculate further that in the course of having to adapt to difficult status problems, the late-maturers have gained some insights and are indeed more flexible, while the early-maturing, capitalizing on their ability to make a good impression, may have clung to their earlier success pattern to the extent of becoming somewhat rigid or over-controlled.

The Edwards Personal Preference test shows relatively few significant differences between the two groups. This is a self-report device which measures 15 variables named from Murray's list of needs (2).

On the Edwards test, two of the scales are discriminating for our groups at the 4 and 5 per cent levels respectively. The early-maturing group scores high on the *dominance* scale: "to be a leader, persuade, argue for a point of view," while the late-maturing score high in *succorance*: "to seek encouragement, to be helped by others, to have a fuss made over one when hurt." For the total group of 40 who took the Edwards test at around age 33, skeletal maturing at age 17 correlated .40 with dominance,

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[5] This "socialization" scale was first presented by Gough (5) and described as a scale for "delinquency." It is now scored in the opposite direction so as to emphasize the "socialization" side of a socialization-asocialization continuum. In a validation study lowest scores were obtained by those nominated as high school "best citizens"; highest scores by delinquents.

TABLE I

SUMMARY OF STATISTICAL FINDINGS FOR THE FOLLOW-UP COMPARISONS

Physical Measures: Means

	EARLY		LATE	
	Age 14	*Age 33*	*Age 14*	*Age 33*
Height	5 ft. 8 in.	5 ft. 10 in.	5 ft.	5 ft. 9½ in.
Weight	126.9 lb.	172 lb.	93.2 lb.	165 lb.
Endomorphy*	2.6	3.1	3.1	3.3
Mesomorphy*	4.5	4.6	3.9	4.3
Ectomorphy*	3.4	3.4	3.7	3.7

Psychological Scales

	MEANS		*Signif. of Difference*†	*r*‡	*Signif. Level*
	Early	*Late*			
California Psychological Inventory					
Good Impression	25.6	15.7	.006	.50	<.01
Flexibility	9.7	13.8	.05	—.23	
Delinquency§	13.9	20.3	.07	—.40	<.01
Impulsivity	17.1	23.4	.13	—.31	<.05
Dominance	31.7	27.4	.17	.26	
Responsibility	32.9	30.0	.19	.35	<.05
Edwards Personal Preference Schedule					
Dominance	19.4	12.6	.04	.40	<.01
Succorance	7.1	12.4	.05	—.48	<.01

* Rating on 7-point scale; 7 is high.
† Significance level, Wilcoxon Rank Test.
‡ Pearson product-moment correlation with skeletal age / chronological age, at 15 years.
§ A low score indicates "socialization."

and —.48 with succorance (both significant at the .01 level). Table I summarizes the statistical findings for the follow-up comparisons.[6]

To those of us who have known these young men for over 20 years, some of the most interesting questions remain to be answered. What have been their successes and failures in achieving occupational and personal goals? All are married, and in each group the present number of children averages 2.3. Socio-economic ratings, based on homes and neighborhoods, show no differences for the two groups. There are no significant differences in average educational level, although a slightly higher proportion of the later-maturing have college degrees and the only college teacher is in this group.[7]

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[6] Statistical analysis of the data was completed under a research grant from the Department of Education, University of California.

There is some indication that more of the early-maturing have attained vocational goals which are satisfying and status-conferring. Among this group five are in professional careers; four are executives; one is a skilled mechanic and one in a clerical position. Of the executives, three are in positions of somewhat impressive status.

Among the late-maturing, four are in professions, two are still university students, two are salesmen, and one is a carpenter. None has attained an important managerial position and several, by their own account and the nature of their work, seem somewhat precariously unsettled.

In the former study descriptive pictures were given of late-maturing boys who illustrated contrasting behavior patterns of attention-seeking activity and of withdrawal. It may be appropriate here to summarize individual records for several of those at the early- and late-maturing extremes.

Tom, a late-maturing boy as described in a previous article (7), was at the age of 13 a chubby small boy, very rosy of cheek, sparkling-eyed, laughing and dimpled. He was gay, active, good-humored, emotionally volatile. Even as a senior in high school he was still a "little boy." His voice had not changed. At a time when most of his classmates were paying careful attention to cleanliness and grooming he often came to school with dirty hands and in misfit clothes. He was likely to get into childish scuffles; physically, however, he was not able to cope with his classmates, and would sometimes break down and cry when things went badly.

Unlike most of the physiologically retarded group, he seemed not to be anxious about his immaturity. Growth continued during his college years, when he added four inches to his height, and 20 pounds to his weight. As a graduate student Tom began to play baseball on an intramural team and for the first time, according to his own report, was able to hold up his end of the game. So impressed was he with his own physical gains (there had never been any doubt about his mental abilities) that he raised his sights in regard to vocational goals, achieved a graduate degree and joined the academic ranks as a college teacher.

The interviewer who saw him most recently at the age of 33 described him as: "A genial smiling young man, well integrated, mature, observant, well satisfied with his life situation." He is making excellent progress professionally, and achieving recognition among his colleagues. We now feel that we were justified in the impression gained during his high school years, that Tom was able to cope with the problems of late-maturing without permitting these to create a basic feeling of handicap.

Lonnie, on the other hand, was a late-maturing boy whose physical deficiencies in size and athletic prowess were a persistent source of tension and anxiety. His activity pattern was expressed in excessive verbalizations which became more aggressive and compulsive as he progressed through adolescence.

Excerpts from a staff group conference after a camping trip illustrate this point:

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[7] The writer is indebted to Mr. Read Tuddenham who secured much of the interview material through a grant from the Office of Naval Research.

> (W.J.C.) Lonnie was by far the most talkative in this very talkative crowd. . . . Saturday night after most of the boys had gone to sleep Lonnie turned to a question which had to do with the history of religion. He pursued the subject with vehemence.
>
> (M.C.J.) On Sunday morning when we were just finishing breakfast, Mr. G. mentioned a friend who had been working with a growth-promoting hormone. He had hardly uttered a sentence when Lonnie, who had been at the next table, suddenly appeared by his side.
>
> (J.C.) This led to further discussion throughout the day and on Monday, at school. . . . He was again on the subject of the hormone. He wanted to offer himself as a subject because he had always been small and underweight, "skinny." . . .
>
> (T.C.) Lonnie talks with ceaseless energy, with a good deal of ego at stake . . . "I know a fellow who is a grandson of a Senator. But when we argue I can beat him everytime with cold facts—statistics."

In a current interview many of the same characteristics of restless energy emerged. The interviewer commented that he was hard to rate because of tendencies which were superficially in contradiction to each other. He seemed self-centered, self-sufficient, and with a strong drive for autonomy, but was also dependent on his wife and "socially-minded" in the sense of having abstract interests in groups, social issues, etc. "He seems to have achieved a fairly stabilized adjustment—if not a conventional one. Seems able to work toward long term goals because he has considerable personal freedom. He is tense, rebellious, intellectual, too bent on satisfying his own needs in relationships to relate well to groups either as a member or a leader."

When asked what he would do differently if he had the last 15 years to live over again, Lonnie replied that he would have gone ahead as fast as possible with academic work. "As it was, I was out for Adventure with a capital A and Experience with a capital E—a hollow sort of goal which doesn't satisfy. I travelled a lot but could have done as much living just around the corner."

Late-maturing was merely one of Lonnie's problems, but it led to an impaired status which was an immediate source of frustration, and of rebellious compensatory strivings. These patterns are still apparent in his adult life, although he now seems to take a more realistic view of the roles which are possible for him.

A third late-maturing boy, with a very different set of behavior patterns, was *Charles*—one of the two brothers described in the earlier publication as socially inconspicuous, extremely quiet and self-contained. Although not especially noticed or approved by his peer group, he had a variety of substantial individual interests, and congenial family ties.

Charles is described as "Frank and open in expression, individualistic, and outspoken, primarily an introvert. Though somewhat odd, he is probably fairly well liked by his associates. He seems relatively insecure, requiring support and reassurance. He expresses both hostility and dependence in relation to authority figures. . . . He is mildly self-centered, somewhat imperceptive of others' feelings."

In his own description of current activities, he observed, "My job requires relatively little contact with people. I like it this way. . . . My wife is not overly fond of people. . . . My wife and I are very congenial, we talk over everything together."

Charles, who used to be so shy about girls, so retiring and quietly accepting of his own physical deficiencies, now seems to have established a way of life similar to that of his parents, and one which meets his needs with reasonable adequacy.

Howard was early-maturing. In the eyes of adult observers and classmates, he was advantaged in this respect as well as in family background and personal endowment. He was the younger of two boys from a home well above average in financial security, community status, and interpersonal compatibility.

He was well-liked by both boys and girls but although Howard had the same best friend for many years he seemed less dependent upon social ties than was the case with most youngsters of his age. "The girls would like him to take more interest in them," wrote one observer in the ninth grade. He learned to dance in the eighth grade but was a little shy at first with girls.

By the ninth grade he had lost his shyness, but led too busy a life with his own individual projects and his family's activities to be more than casually interested in girls or to accept more than a few of the many party invitations which he received. "He is a grand-looking boy and the girls feel it a great loss that he is not more interested in them."

Even in his senior year at high school when one girl seemed to be steadfastly claiming his attention, he was described as follows at a staff conference after a party which involved both swimming and dancing: "In his customary manner, Howard left Clare to her own devices and went to join the boys in the pool. He enjoys athletic activities even more than devotion to his lady love. . . . I have a feeling that any girl who goes with Howard will have to stand for that arrangement . . ."

Referring to his social development 15 years later he said, "My interest in girls was not any problem in high school."

Throughout the years of the study, descriptions of Howard stressed his maturity in relation to the group: "Has always been one of the largest and best looking. . . . His prestige among boys is quite marked, with no striving on his part (age 14.4). . . . Howard, like several of his friends this semester, seemed to have reached the stage of 'putting away the childish.' They sat and talked after lunch while the other boys played ball. He has unquestioned prestige, though he seems unaware of it . . ." (14.9).

"Howard is large, seems much more mature than almost any of our group (15.9). . . . Considerable maturity of manner, talked at length to H. E. J., and as an equal, about cameras and photographic equipment" (16.0). A student assistant in the physiology laboratory, impressed with Howard as a 16-year-old said: "He doesn't attempt to make a show of himself or his accomplishments although he now holds the record for vital capacity of 6.40 liters and of 3 minutes 37 seconds for holding his breath."

In spite of the fact that others recognized his accelerated maturity from the time he was in elementary school, Howard, in retrospect, described his own development as physically retarded.

A possible clue to this erroneous belief comes from his position in the family, as the younger boy. His father was past middle age when Howard was born and according to his own analysis of the situation, it was the older brother who had received the understanding and attention of a young, vigorous, active father. Howard missed this when he was growing up. It was his older brother who, in turn, furnished the active, interested companionship in which Howard may have felt a fatherly, as well as a brotherly quality. He certainly compared himself to this older brother and may have, growing up in the shadow of this comparison, thought of himself as inadequate in many ways, including rate of maturing. An interpretation of his response to the Murray pictures suggests that this is so:

> Age 17: Howard's conflict seems to lie in his inability to reconcile his position as an individual with his position as a member of his family. . . . He tells of his fear that he is inadequate as a family member. His relationship to his older brother is basic to his difficulty. He is impressed with his

older brother's superiority. Howard is far from the inadequate person he imagines himself to be in comparison with his brother. It seems likely that he does not feel inadequate except when measuring himself against his exaggerated notion of his brother's accomplishment.

In other circumstances, while his demands on himself are high, he appears to be able to meet them. In his struggle to emulate his brother he has developed qualities basic to superior performance. He shows determination and persistence, a high level of energy, and the capacity to direct and maintain effort toward the goal he sets for himself. In the stories, he exaggerates his weakness but he indicates, as well, his strength.

As an adult in his early thirties, Howard seems to have come to realize his potentialities. "I've developed a good deal more self-confidence. . . . I feel I have had enough education and experience to tackle a job that I have some feel for, so I'm optimistic. In my work, I'm in a dominant position and you build up self-confidence. In college, fraternity life and athletics helped, too."

The interviewer summarizes: "Mr. F. has strong needs for acquisition and mastery. He is dominant, active, a leader and autonomous. It would be hard to keep him down."

Bob provides another example of the socially advantaged early-maturing boy. An only son in a prosperous upper-middle-class family, Bob had a pattern cut out for him to follow. He was expected to enter his father's business. His mother knew exactly how she wanted him to grow toward manhood and what course to pursue in fulfilling this goal. "I will not have a dirty boy," she said on one occasion. But this meant that he had to wash up after strenuous play, not that activity was prohibited. She understood that boys like to ride bicycles, build boats, and later, drive cars; that they are happy when playing with neighborhood boys in the backyard as preadolescents, and that as adolescents their social interests include girls, dancing, parties. Creditable scholarship and practice in leadership were encouraged in school.

All of these goals were easily attained. Bob was slightly above the average of our group in intelligence and achievement tests. He was rated consistently on the favorable side, in a wide range of social and personal characteristics. Classmates placed him very high in leadership and popularity. In self-report, he was consistently on the well adjusted side—above the eightieth percentile for the group in all categories, which implied family, social, school and personal satisfactions.

After 15 years, Bob has achieved the realization of his own and his family's goals: "I enjoy my work very much . . . it's a business of my father's that I've always been interested in going into." To the question about how he might live his last 15 years over again he responded: "I'd do them about the same."

Two interviewers, a man and a woman, reveal their own somewhat different biases when summing up their impressions of Bob: The male psychologist wrote: "Mr. A is a tanned, dark-haired, immaculately dressed business man, self-assertive, confident in general bearing but not quite at ease during the interview. He is satisfied with himself and the mores of his business milieu . . . a rigid personality with little insight, little ability to relax and enjoy himself. He puts business first. He has no conflict since he faces no difficult external problems."

The woman who interviewed Bob reacted as follows: "Mr. A fits happily into the 'ideal' stereotype of a successful upper-middle-class business man with no strain and with none of the unfavorable connotations. Although he has social ambitions not yet attained and lets work invade leisure time to a minor extent, he does not seem under pressure about his work. His range of interests are not wide or differentiated . . . he accepts the stereotype of upper-middle-class without much thought . . . his interests are social (in the sense of personal necessity for rapid readjustments and in requiring the adolescent to meet adult expectations which are more appropriate to size and appearance than to other aspects of maturing. The adolescent handicaps and advantages associated with late- or early-maturing appear to carry over into adulthood to some extent, and perhaps to a greater extent in psychological than in physical characteristics.

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AN EVALUATION OF SOCIOMETRIC - SOCIAL BEHAVIOR RESEARCH WITH PRESCHOOL CHILDREN

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Iowa Child Welfare Research Station

The usefulness of the sociometric score as a measure of social acceptance has been debated and investigated for about 25 years. One point of view found in current as well as early sociometric literature is expressed by Northway in her 1951 *Primer* (13):

> The usual measures of reliability and validity do not seem to be particularly appropriate for sociometry. Other tests such as those of intelligence and personality are based on the assumption that they are measuring a factor, capacity or trait within the individual. Sociometry, however, is concerned with discovering the preferred relationships which are present in a group at a particular time. If each individual discloses his preferences on a test honestly, the test is perfectly reliable and valid (p. 16).

Another point of view is evident in investigations of validity and reliability of the sociometric score. These studies have used other measures of social acceptance as indicative of usefulness, and retest relations to establish reliability.

The two other measures most frequently related to sociometric test choices of preschool age children have been: (1) observation records of social behavior in nursery school groups, and (2) teacher judgments of social acceptance in these groups. The nursery school group situation affords a more extensive opportunity to study the spontaneous social participation of children reared in families than can be found at present for any other age level. For older subjects, the most similar group situations used for social observation records have been school recess periods, school dances, camps, and office conversations (10). Evidence from these studies with older subjects suggests, but does not demonstrate conclusively, a direct positive relation between sociometric scores and real life social acceptance or interaction. However, sociometric scores have been shown to be related to an average of teachers' or observers' judgments of social acceptance for

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groups drawn from elementary schools, adult education programs, the armed forces, and industry (10). Variability has been large in the relations obtained between individual teacher's judgments and sociometric scores and no variables have been found to account for these individual differences. Because two or three teachers are used for each preschool group of 15 to 20 children, rather than the one teacher for a group of 25 to 40 subjects typically found with older age groups, the preschool group situation also affords excellent opportunities for study of the teacher judgment measure.

Sociometric – Play Interaction Studies

There are six published studies that attempt to establish sociometric choice as a predictor of observed social interaction or choice in nursery school or kindergarten free play. Three of the studies employ the rank difference coefficient as the measure of relationship and its standard error as the basis of estimates of significance. The standard error has been considered to be inadequate for such purpose since the publication of Olds' (14) and Thornton's (17) tables of significance for rank difference coefficients based on the exact sampling distribution of rho. The writer checked the coefficients of these three studies with Thornton's Table I. The results of these studies will be described on the basis of this check, rather than as reported in the studies.

An early investigation of sociometric-play interaction relations was a University of Iowa Study in Child Welfare by Hagman (7) published in 1933. She had 33 nursery school children fish for celluloid frogs, ducks, and fish on three different days and, after catching a toy, tell to whom they wished to give it. Play contacts of children were recorded by her modification of the Challman technique (3). The names of children playing together during a 15-second interval were recorded for an average of 40 observations per child. The children observed to rank as the five most frequent play contacts constituted 55 per cent of the verbal choices of 19 five-year-old children, and 30 per cent of the choices of 14 three-year-old children. The same children were named each day by 26 per cent and 28 per cent of these respective groups, and 32 per cent of these repeated choices were the most frequent play choices of the children who chose them. Hagman's oft-cited conclusion was: "The figures show that the questioning technique used was of little value as a method of determining the most frequent companions of the children in the group situation" (p. 46).

Koch (8), in a study published also in 1933, had children make verbal paired-comparison choices between all other 16 four-year-olds in their urban nursery school group. It took four months for these choices to be completed. Observation records were time sample check lists that furnished 37 behavior measures. She reported as significant many rank difference coefficients between verbal choices and social behavior variables, but only eight are significant (.05 level) by Thornton's Table I (17). The one positive relation of these eight was for "total acceptance of situation." The seven significant negative relations were for : "strike others," "push and pull others," "dawdle," "total escape reactions," "refuse children," "refuse adults," and the total of the last two categories.

Rosemary Lippitt (9) made an investigation similar to Koch's, using 45 Iowa Child Welfare Research Station preschool subjects. It took the children 6 to 12 hours scattered over many days to make paired comparison choices of the 14 other children in their group. Relations between these choices and 11 measures from eight check list 10-minute observation records per child were at the chance level (i.e., two of 33 rhos attained significance by this writer's check). When children were divided into upper, middle, and lower popularity groups and *t*'s computed for differences in means for the 11 measures, only eight of 216 *t*'s attained the .05 level of significance.

Florence B. Moreno (11) used as sociometric choices each child's verbal choice of a playmate for painting or drawing at a specified time in play. She made comparisons individually of these choices of 12 urban children and their play choices of companions in 35 hours of observation records. The presentation of both types of data was so complete that it was possible for this writer to compute a rank difference coefficient for Moreno's data, assigning ties for choice rank at random. The rho was .38 and nonsignificant.

Frankel's (5) subjects were 19 three- to five-year-old children attending the University of Toronto nursery school. Play contact choices were determined from six weeks of observation records by the Challman technique (3). The sociometric test occurred midway in the observation period. All rhos reported between sociometric and play contact choices are at the chance level by the present check. Additional analysis found that 32 per cent of the children chose 50 per cent to 100 per cent of their most frequent playmates, but only 11 per cent of the frequent play contacts were also verbal preferences, and 58 per cent of the children had no observed play contact with half their test choices.

Biehler (2) limited his study to percentage of agreement of sociometric and play contact choices of 25 Minnesota Institute of Child Welfare kindergarten children. Play contact choices were determined by two sets of 25 Challman technique observations (3) per child made within a two weeks period and separated from each other by a month. Sociometric test and retest first choices agreed with 72 per cent and 76 per cent respectively of the play contact first choices. He did not present quantitative data for second, third, and fourth choices, but stated there were no clearcut trends in these choices.

There is, then, no satisfactory evidence from obtained rhos that the sociometric score predicts social acceptance as observed in play for the preschool ages. Although one study reported sizeable percentage agreement between sociometric and play contact first choices, evidence of three studies indicates percentage agreement for "most frequent" choices to be either negligible or between 30 per cent and 50 per cent.

SOCIOMETRIC – TEACHER JUDGMENT STUDIES

The investigations by Koch (8) and Lippitt (9), already described, included also rho's obtained between sociometric scores and teacher judgments of social acceptance. Kock obtained a rho of .71 for one teacher, significant at the .01 level. Lippitt reported nonsignificant rho's between judgments of five teachers and sociometric scores for three groups of children. J. L. Moreno (12) reported in the mid-thirties percentage agreement of a teacher's judgment with sociometric choices of a kindergarten class. Since only seven teachers' judgments have been studied, data on relations between sociometric scores and teacher judgments of social acceptance at the preschool ages are not adequate for the drawing of conclusions.

ANALYSIS OF REASONS FOR FAILURE TO FIND EMPIRICAL RELATIONS

Since studies with subjects of all ages have failed to find adequate evidence of relations between sociometric tests and observed social behavior, it is necessary to pose three conflicting hypotheses: (1) There is no basis for assuming the sociometric test to be a useful measure. (2) Sociometric tests are useful measures, although the usual measures of validity are not appropriate for sociometry (the viewpoint presented in the quotation from Northway (13) in the introductory paragraph). (3) While methods of investigation and statistical analysis used in these investigations have not established empirical relations between social behavior and sociometric choices, present knowledge is adequate to devise methods of measurement that will demonstrate the presence of such relations. Since hypotheses 1 and 2 need to be considered only if evidence indicates hypothesis 3 is not tenable, this section presents certain gross indications for the tenability of hypothesis 3.

Methods of Eliciting Sociometric Choice

Inadequate methods of eliciting sociometric choice may be responsible in part for the lack of evidence of usefulness at the preschool ages in particular. Two investigations have supplemented the usual verbal questions with photographs of children in the group. Polansky, Ronald Lippitt, and Redl (15, 16) had their 10- to 15-year-old emotionally disturbed subjects sort photographs of group members into choice boxes labelled with colors and words for degree of liking (or of excellence on near-sociometric questions). Although behavior prediction was not demonstrated for sociometric choice, many such empirical relations were reported for near-sociometric choices. Biehler's (2) kindergarten subjects completed line drawings with photograph faces of their preferred playmates, selected from photographs of all children spread on a table. Biehler is the only investigator using preschool subjects to obtain clear evidence of relations with observed playmate choices for the sociometric test. It may be that supplementing verbal questions with photographs of children in a given group is required before preschool subjects can make sociometric choices which are related to social behavior interaction and choice.

Weighting of Choices in Scoring

The two most frequently used sociometric scores have been the sum of the number of choices as a friend (unweighted) and the sum of these choices weighted for order of choice. In their review of the experimental literature dealing with stability over time of sociometric test scores, Witryol and Thompson (18) point out that evidence and theoretical rationale are lacking to favor either type of score. Only two studies have been found that report evidence bearing on this issue. Frankel (5) reported a rho of .98 between weighted and unweighted choices of nursery school children. Clampitt (4) reported rhos of .99 for girls and .97 for boys between unweighted and weighted for choice sociometric scores of institutionalized mentally defective children.

The correlation of weighted and unweighted composite scores is not used to determine the combining of weighted or unweighted measures in prediction problems using other tests. Instead, according to Bechtoldt (1), the crucial point at issue in the weighting of parts is the effectiveness of prediction of the combined scores. The usefulness of weighted and unweighted measures can be interpreted most meaningfully by the empirical relations established between the composite score and the variable to be predicted. No report was found in the experimental literature of a comparison of the correlation of weighted and unweighted sociometric choices with independently measured variables.

Social Observation Records

The two most frequently used methods of recording social observation, the qualitative check list time-sample technique (6) and the Challman time sampling technique for social contacts (3), were developed in the early 1930's. Marked differences exist in the advantages, disadvantages, and type of resulting data of these two techniques. The check list time-sample technique observes each child individually and so requires a large total observation time to obtain adequate samples, but it has the advantage of recording qualitative aspects of social behavior. The Challman technique records only the names of children playing together (roughly defined) at a particular time; it has the advantage of requiring little observation time to collect adequate samples of this behavior. In the Koch (8) and Lippitt (9) studies, many qualitative check list categories were used in the time sampling technique; it is possible that samples of behavior in only a few categories could be large enough or differ sufficiently between subjects to enter into significant relations with sociometric choice. On the other hand, the Challman technique may define play contacts too broadly to enter into relations with sociometric choice (i.e., coefficients may be lowered because aspects of play unrelated to friendship choices are included).

Statistical Indices Used

Statistical indices used in previous studies may be questioned also. Rank difference coefficients have been used for the correlation of sociometric choice and behavioral interaction or choice in all preschool subject studies and in most studies made at the older ages (10). None of the studies using rho described any consideration of the possibilities that the data might be continuous, normally distributed, or exhibit linear regression in relations, and hence that relations might be distorted and obscured by transformation to the rectangular distribution of the rank difference coefficient.

Percentage of agreement has been used to indicate agreement of sociometric and behavioral choice in most studies analyzing this aspect of choice. In no instance have statistical tests been made to see if obtained agreement in choices exceeds that possible by chance.

SUMMARY AND CONCLUSIONS

A review has been made of investigations concerned with the usefulness of sociometric test choices of preschool age children. There is no satisfactory evidence from obtained rhos that sociometric choices predict social acceptance and interaction of children in nursery school free play. Evidence is available concerning only seven teachers' judgments of this acceptance. An evaluation of methods of investigation and statistical analysis used in these studies suggests that use of methods presently known to be more adequate for measurement may make possible the demonstration of such usefulness for the sociometric test.

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A PICTURE SOCIOMETRIC TECHNIQUE FOR PRESCHOOL CHILDREN AND ITS RELATION TO TEACHER JUDGMENTS OF FRIENDSHIP

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The powerful influence of social groups on behavior and personality development is recognized both by lay and professional persons. Professional study of group behavior *as such,* as well as with reference to its influence on individual behavior and development, is a major research preoccupation of the sciences of cultural anthropology, psychology and sociology, and of such professions as psychiatry and social work. Sociometric studies of one type or another constitute a major strand in the fabric of ongoing research with groups. Sociometric tests have proved useful in the sense of predicting an average of teachers' or supervisors' judgments of social acceptance, although not individual teacher or observer judgments, in a wide variety of "societies," ranging from elementary school children to adults in schools, the armed forces and industry. But similar usefulness has not been demonstrated for sociometric techniques in preschool groups (7, 8). Actually, no justification for the use of the sociometric test as a measure of social acceptance or friendship has been demonstrated for preschool aged children. An analysis (10) of sociometric studies in the preschool age range (e.g. 1, 3, 4, 6, 7, 8, 11) reveals no satisfactory evidence that hypotheses of no relationship can be rejected for the observed social behavior variables employed in these investigations. Likewise, sociometric scores of preschool children have not been shown to be stable over periods of time ranging from one to nine months: i.e., intercorrelations have not been even as large in size as the r's required for statistical significance of unrelated measures (2, 8, 13). Such conclusions have been reached by some of the authors of these studies, or have been arrived at by reanalysis of data originally reported positively (9, 10).

The present authors are convinced that friendships of a reasonably stable and discriminating sort exist at the preschool ages and believe that

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the developing of methods of studying such friendships in a precise and reliable fashion would constitute a worthwhile contribution to the social-behavioral sciences. This investigation sought empirical answers to two questions: (1) Is stability over time a characteristic of social acceptance measures of children in newly formed preschool groups? (2) Are children's sociometric choices related significantly to teacher judgments of friendship of these children? If so, is a first sociometric about as adequate as later measurements?

The evaluations by one of the authors (10) suggest that at least some of the previous failures to demonstrate sociometric usefulness (prediction of teacher judgments of acceptance) at the preschool ages may have been due to inadequate measurement of sociometric standing and/or to the use of statistical indices of relationship less efficient than some that might have been used. With such possibilities in mind, a picture sociometric technique was developed, teacher judgments of friendship elicited, and repeated measurements of both these types taken.

SUBJECTS AND PROCEDURES

Subjects (*S*s) were 48 children, 24 boys and 24 girls, attending three different preschool groups in the Laboratory Preschools of the University of Iowa's Child Welfare Research Station. Occupationally speaking, fathers of all but two of the *S*s were professional or business-managerial. Sex and age distributions for the three groups are shown in Table 1. The group numbers I, II and III as used in this table will be applied to the groups throughout the present paper.

The three groups were selected from the Station groups available only after the selection of children and the assignment of teachers by the usual Station procedures. These procedures were carried out independently of both investigators. Selection of the groups for use in this study was made entirely on the basis of new group formations: i.e., the majority of the

TABLE 1

AGE AND SEX OF CHILDREN ATTENDING THREE PRESCHOOL GROUPS

	Group I *Summer Session* *1953*	*Group II* *Spring Semester* *1954*	*Group III* *Summer Session* *1954*
Number of Girls	9	10	9
Number of Boys	10	9	10
Mean Age at First Sociometric (in years and months)	4-2	4-2	4-11
Age Range at First Sociometric	3-9 to 4-9	3-4 to 5-2	4-1 to 5-7

children in each group had not previously attended a Station preschool. Since there is no *a priori* reason to question the assumption that the children in any group were a sample of the Station preschool population, the 48 *Ss* who did not overlap groups, and who had three test periods completed, are treated as a single sample for the indicated computations.

Overlap in group membership occurred for 8 *Ss*. Five children in II were also *Ss* in I, but had not attended preschool during an intervening fall semester. Two children in III were *Ss* in II. One boy served as an *S* in all three groups. The data for each of the *Ss* used in the $N = 48$ computations were from only that group for which the largest number of measures (including measures not described here) had been obtained for the given child.

The size of each group was 20 *Ss*, but in each group one child was absent too many days for data to be gathered, so the resultant *Ns* are 19. All groups met in the afternoon four days per week and used the same building, playyard and equipment. Teachers for the three groups were generally equated in number and for experience. There was no overlap of teaching personnel among the groups.

In the picture sociometric technique, each child was asked to name or point to photographs of preferred playmates during an individual interview. Three choices of playmates were encouraged for each of three activities: outside play, inside play, and listening to stories. Additional choices were also recorded.

Each child was photographed achromatically at least twice, the resultant pictures measuring 3⅛ in. by 4⅝ in. The teaching associates (head teachers) of each group selected the picture most "representative" of the child. These photographs were placed in four rows of five pictures each on a 22 in. by 25 in. piece of white wallboard. This board was fastened to the wall of the experimental room at the estimated eye level of a seated child of the *Ss*' age. One-half of a group, randomly assigned, viewed one of two random photograph position orders at the first sociometric interview. Orders were alternated for subsequent interviews of all children.

The experimenters had been acquainted at least a week with each child before the first interview. All *Ss* voluntarily accompanied *E* to a sparsely equipped playroom in the preschool building for "choice sessions." *Ss* began the session seated in a chair directly in front of the picture board; most children stood several times during the interview to gain closer views of the photographs. *Ss* were asked to find their own picture. All *Ss* then, or after a few promptings, pointed to other children or named other children to whose pictures *E* then pointed. *E* controlled pointing and naming only to the extent of making sure that all pictures were pointed at and named before choices were requested. The wording of sociometric choice questions, "Who do you like to play with (outdoors)?," was the same in all interviews. Questions designed to elicit responses indicating that the child distinguished outdoor and indoor play situations preceded choices for these situations. Choices were completed for each situation before choices were requested for the next situation.

Three sociometric interviews were completed for *Ss* in I and III, and four for *Ss* in II. The mean calendar day interval between sociometrics for all groups was 10.5 days, standard deviation 3.26 days. Initial interviews began when the photographs of all children were available, after 14, 22, and 9 school days for I, II and III respectively. All measures for I were made by a male graduate student,[2] with test sessions ranging from five to 15 minutes in length. The second author did assessments for II and III, with test sessions ranging from three to seven minutes.

A child's sociometric score was the sum of the choices of the child as a playmate by all *Ss* for any and all of the interview situations. Preliminary analyses of data indicated that weighted scores predicted teacher judgments better than unweighted scores. Hence, before choice summation, all first choices were weighted five points; second choices, four points; third choices, three points; fourth choices, two points; and fifth or later choices, one point.

The population of teacher judges of friendships in the three groups consisted in each case of the teaching associate and two assistant teachers; and, additionally for I, two graduate student observers who knew the group well. One of these two observers completed only the first two of the three judgments. The three teaching associates each had several years of teaching experience. I and III had one assistant teacher with no previous teaching experience and one with a year or more of previous teaching experience. Each of the two assistant teachers for II had one semester of teaching experience.

These judges were asked to list the four best friends in order of closeness for each child in the group. Judgment forms differed only in *Ss*' names for the three groups. The judges were given the form on the day of the first sociometric interview of a child in any series, and returned the judgments before the day of the first interview of the next series. Judgments for children absent during the sociometric interval were delayed for appropriate time periods of school attendance.

The three groups of teachers did not differ significantly (analysis of variance) in the number of best friends listed per child; but they were not consistent in the degree of agreement (*W* and the average rho) on repeated judgments. Agreement coefficients beyond the chance level were obtained for all judgments for teachers for II, for the first two judgments only for I, and for the first judgment alone for III. These differences on ranking of children within and between teacher groups led to use of pooled teachers' judgments for this variable.

The teacher judgment score, then, that was used to compute relationships was the mean of all teachers' judgments for a given child at the specified time. Each child's score for a teacher judgment was the sum of the weighted average choices of the child as being a friend of other children, weights being assigned and summed as described above.

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[2] The authors appreciate the help of Mr. Gerald Weiss in the collection of these data.

Product-moment correlation indices are preferred over the rho correlations used in earlier investigations because of the efficiency gained by using all the data. There was no reason to doubt continuity of the data used in this investigation. Inspection of scatter plots indicated no reason to question homoscedasticity of variance or similarity of shapes of distributions. Hypotheses of linear regression could not be rejected at the .10 level for the F's obtained for regression of sociometric scores and teacher judgment scores on each other. The data can be described as satisfying assumptions for use of product-moment correlations.

RESULTS

1. Is stability over time a characteristic of measures of social acceptance of children in newly formed preschool groups?

Sociometric intercorrelations for the three groups, separately and combined, are given in Table 2. Half the individual group coefficients are significant by the sampling distributions of r for unrelated measures. Hypotheses of no relationship could not be rejected for the other six intercorrelations by this "best guess" comparison, although an additional three correlations closely approach significance at the .05 level. Five of the seven correlations for scores separated by 10-day intervals can be described as related beyond chance by this standard.

TABLE 2

INTERCORRELATION COEFFICIENTS FOR SOCIOMETRIC SCORES FROM INTERVIEWS AT TEN CALENDAR DAY INTERVALS FOR ALL THREE GROUPS[†]

Group	*Sociometric Series*	2	*3*	*4*
I	1	.67**	.74**	
	2		.76**	
II	1	.43	.22	.27
	2		.73**	.43
	3			.53*
III	1	.85**	.33	
	2		.41	
Combined ($N = 48$)	1	.66**	.45**	
	2		.71**	

[*] Significant at < .05 level.

[**] Significant at < .01 level.

[†] Sampling distributions for correlation coefficients between repeated observations have not been developed. The significance levels used are those for correlations between independently obtained measures and may not be what would be obtained for intercorrelation coefficients.

Sociometric scores can be obtained for preschool children only by using small groups and this size limitation restricts inference from the group coefficients. Intercorrelations for the 48 non-overlapping Ss were as follows: test 1 vs. test 2, .66; 1 vs. 3, .45; and 2 vs. 3, .71. Each of these exceeds the r required for the .01 or less level of significance of independent measures. These data furnish evidence of a relationship between sociometric choices separated by 10- and 20-day intervals (i.e., of moderate stability over time). Significant differences in the 10-day interval related r's were not obtained by t test, but 10-day interval correlations were larger than the 20-day interval correlations in either direction (p of obtained t's, $< .05$ level in predicting third sociometric; p, $< .01$ level in predicting the first).

Table 3

INTERCORRELATION COEFFICIENTS FOR TEACHERS' JUDGMENT SCORES AT TEN CALENDAR DAY INTERVALS FOR ALL THREE GROUPS †

Group	*Teachers' Judgment Series*	2	3	4
I	1	.94**	.90**	
	2		.93**	
II	1	.55*	.19	.34
	2		.71**	.62**
	3			.80**
III	1	.62**	.67**	
	2		.76**	
Combined ($N = 48$)	1	.63**	.50**	
	2		.72**	

* Significant at $< .05$ level.

** Significant at $< .01$ level.

† Sampling distributions for correlation coefficients between repeated observations have not been developed. The significance levels used are those for correlations between independently obtained measures and may not be what would be obtained for intercorrelation coefficients.

Interpretation of the stability of sociometric scores depends somewhat on the stability of the other measure of social acceptance, teacher judgment scores. Table 3 summarizes intercorrelations for teacher judgment scores in the three groups, and for the combined group. Ten of the 12 coefficients are larger than the r required for significance of unrelated measures (nine of these at less than the .01 level of significance). All three of the teacher judgment series coefficients for the 48 *Ss* (1 vs. 2, .62; 1 vs. 3, .50; and 2 vs. 3, .72) are significant at less than the .01 level. Here again differences in relations at 10-day intervals were not significant. The 10-day interval correlation was larger than the 20-day for the third (t, 2.481; p, $< .05$) but not the first teacher judgment (t, 1.506, nonsignificant). However, intercorrelations of both variables of this investigation suggest moderate stability over time for social acceptance of preschool children in newly formed preschool groups.

2. Are children's sociometric choices related significantly to teacher judgments of friendship of these children?

Table 4 presents correlation coefficients between sociometric and teacher judgment scores for all groups and test periods, and for the groups combined. Five of the 10 group coefficients are significant, four at less than the .01 level, and an additional two closely approach .05 level significance. The three groups differed in the number of test periods in which hypotheses of no relationship could be rejected. Relations beyond chance were found in all test periods for III, in half the test periods for II, and in none for I. For the combined group, the second and third test period coefficients were significant at less than the .01 level.

TABLE 4

CORRELATION COEFFICIENTS BETWEEN SOCIOMETRIC SCORES AND AVERAGE TEACHERS' JUDGMENT SCORES IN THE RETEST SERIES FOR EACH PRESCHOOL GROUP, AND FOR ALL GROUPS COMBINED

	RETEST SERIES			
Preschool Group	*1*	*2*	*3*	*4*
I: Summer, 1953	.28	.42	.24	..
II: Spring, 1954	.16	.71**	.45	.68**
III: Summer, 1954	.47*	.68**	.66**	..
Groups Combined ($N = 48$)	.19	.63**	.40**	..

* Significant at < .05 level.
** Significant at < .01 level.

The inconsistent finding of relations in the three groups has a possible explanation other than the small number of children in each group. Individual teachers have been reported (5) to vary markedly in ability to predict elementary school children's choices of friends. To test this difference in teachers' judgments for preschool children, the authors sought a statistical test of agreement between teacher and child choices of three best friends (unordered). A chi square test of agreement is possible if it can be assumed that a teacher's judgments for one child were not influenced by judgments for another child, or were independent (an assumption not susceptible to proof or disproof). Using this assumption, chi squares were computed from the probability of occurrence of the obtained agreement between each teacher and child. For each teacher these chi squares were summed for the group and the probability determined.

The obtained significance levels for these summed chi squares were consistent with the data for group correlations between sociometric and teacher judgment scores. Agreement for two teachers of III was below the .001 level of significance for all three judgment periods, but agreement was significant at the .02 level for the third teacher on the last period alone. All three teachers of II had chi squares below the .02 level on the last two judgments, and below the .05 level on either the first or second judgment. Agreement beyond chance probability for I was found only for one observer on the second judgment and for two teachers and both observers on the first judgment. These data indicate that agreement beyond the chance level in three best friend choices would be found on an hypothetical overall test of agreement. The number of teachers with significant agreements exceeds the number of those whose judgments can be accounted for by chance in all test periods.

Percentages of agreement in teacher-child choices ranged from seven to 56 per cent. Approximately 30 per cent agreement corresponded to a chi square significant at the .05 level, and about a 50 per cent agreement leads to a chi square significant at the .001 level.

In summary, although individual teachers varied markedly in ability to judge the child's best friends, relations beyond chance were obtained by two tests of agreement between children's sociometric choices and teacher judgments of friends of these children. Agreement in choice of three best friends was about as good on the first as on later measurements, but sociometric and teacher judgment scores correlated significantly on the later, but not the first, test periods.

Summary and Conclusions

A picture sociometric technique considered suitable for preschool aged children was devised, and three groups of 19 children each were tested three or four times at approximately 10-day intervals. Judgments of the "closest" friends of each child were obtained at corresponding times from the three teachers of each group, and from an additional two observers for one group.

It was possible from the results to reject hypotheses of no relationship between the two social acceptance variables: children's sociometric choices and pooled teacher judgment scores of children's choices. Both the children's sociometric scores and teacher judgment scores were shown to be stable over 10- to 30-day intervals in newly formed groups. The moderate reliability obtained over these intervals suggests that both scores change with time. In each case the second measure predicted the terminal one more precisely (at less than the .05 level) than did the first. It cannot be said whether this is due to increased stability with time, or to decreased time intervals between predictions. Later child sociometric vs. teacher judgment correlations are significant, whereas the first was not.

Individual teachers were found to vary markedly in ability to judge the child's sociometric choice of best friends. Also, teachers of the same children did not consistently agree beyond the level of chance in judgments of social acceptance.

It seems, in general, to the authors that they have demonstrated that a useful technique for measuring preschool children's friendships can be developed and shown to be useful.

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A STUDY IN PREDICTION OF SOCIAL BEHAVIOR OF PRESCHOOL CHILDREN

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Increase of knowledge and development of theory in the area of social behavior depend on the accuracy, reliability and usefulness of measures of social behavior. The sociometric test has been one of the most widely used and promising of the social behavior measures. Its usefulness (or validity) may be demonstrated by showing that its scores are related to observed group relationships.

As pointed out in an evaluation of sociometric – social behavior research by one of the authors (10), previous sociometric studies using preschool children as subjects have not demonstrated such usefulness for the sociometric technique (e.g., 1, 3, 4, 6, 7, 11). However, those who know preschool aged children intimately consider them not only capable of but likely to participate in fairly stable and discriminating friendships with other children. The preschool group situation affords a more extensive opportunity to study spontaneous social participation of children reared in families than can be found at present for any other age level. It is important to measure the amount and nature of this participation, not only for its own practical importance, but because adequate techniques of measurement may make possible investigations of factors influencing the development of social behavior and personality.

The authors of this paper have developed a picture sociometric technique (8) and have demonstrated moderate reliability for it in two or three retests at intervals of approximately 10 days for each of three groups. Sociometric scores obtained by this technique were shown to be useful in predicting another measure of social acceptance. They correlated significantly in a positive direction with teacher judgments of children's friendships in

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two of three groups studied, and it was possible to reject hypotheses of no relationship for all test periods when the subjects were treated as a single sample.

A desire to extend research on usefulness of this sociometric procedure led the authors to devise a technique for recording children's interactions in free play situations and for deriving friendship indices from these records. The two methods of recording observation of social participation used in earlier studies (2, 12) differ markedly from each other in the type of resulting data (10). Failure to demonstrate sociometric test prediction of these data may indicate that both methods are inadequate measures of children's social participation.

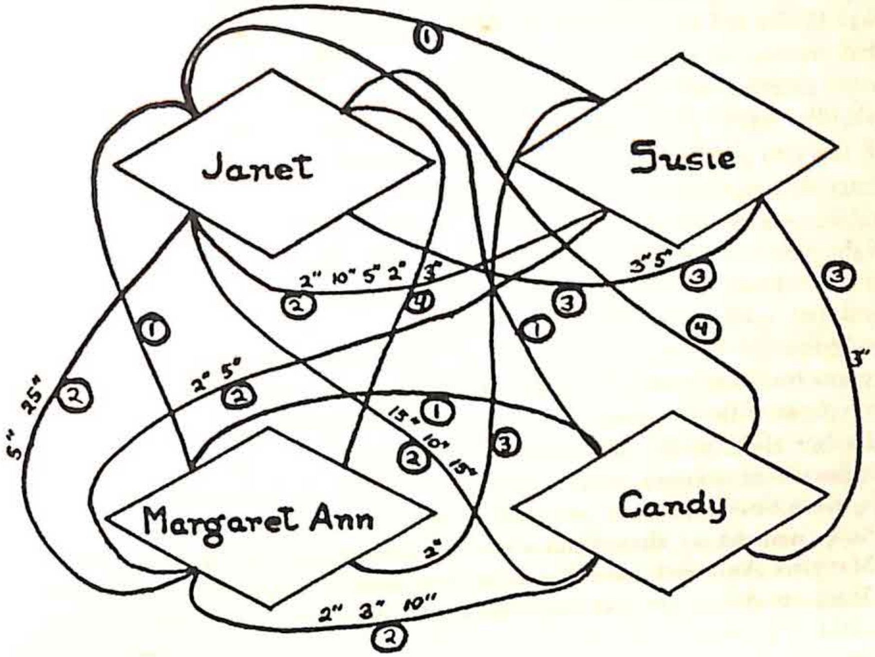
This investigation proposed to investigate three questions:

1. Is the degree of a child's participation in qualitative categories of spontaneous play related to the child's sociometric score and to teacher judgments of social acceptance?
2. Is observed social acceptance in preschool free play predicted by both sociometric scores and teacher judgment scores?
3. Do choices of the child's three best friends in the picture sociometric technique and in the judgment of teachers agree with those observed in play to an extent greater than chance?

Subjects and Procedures

Subjects (*S*s) were all children but one in each of two groups of the Laboratory Preschools of the State University of Iowa's Child Welfare Research Station. One child in each group missed school too much to be included in the study. Group I (designated hereafter as I) was made up of 10 girls and 9 boys having a mean age of 4-2 years, and a range from 3-4 to 5-2 years at the first of the series of four sociometric tests. Group II (designated hereafter as II) was made up of 9 girls and 10 boys. At the time of the first of the series of three sociometric tests, their ages ranged from 4-1 to 5-7 years and the mean was 4-11 years. Occupations of the fathers of all the children were professional or business managerial. The children were either strange to each other or very slightly acquainted at the time the groups were started, with the exception of three children who were members of both groups. One of these three children was the boy in I who missed school too much to be an *S*. Teachers were equated in number and approximately matched for experience (one experienced head teacher and two graduate student assistant teachers in each group), and there was no teacher overlap between groups. The two groups of *S*s were combined into a single sample of 36 *S*s to provide a larger *N* for some computations; Group II records and tests were used in this sample for the three children belonging to both groups.

The methods of obtaining sociometric test scores and teachers' judgments of friendship status have been described elsewhere (8). The first



7-28
Outside
3:51:0

-play house in box.
-continuous chatter.

FIGURE 1—An observation record from Group II, B.

sociometric was started 22 school days after I's inception; and for II, nine school days after the group began.

The method developed by the present authors for recording social behavior in a free play situation was suggested by the Hyde and York technique (5) for studying the social interaction of adult psychotics. The technique made possible a record of four qualitative aspects of social interaction for an average of 3.5 children for each of 1114 two-minute observations.

A complete two-minute observation record is shown in Figure 1.[2] Names of the children to be observed are written in separate diamonds. The upper left side of each diamond represents *associative play* [children seem aware of a common activity or interest, and as further defined by Parten (12)]. Figure 1 shows an associative interaction between each of the *S*s with the exception of Margaret Ann and Susie. *Friendly approach* is represented by the lower left side of a diamond (defined as a verbal approach or response to another child that is neutral, pleasant, friendly or helpful; it may be limited to one word or include many words). Figure 1 indicates that reciprocal friendly interactions occurred in all combinations of pairs of *Ss* except Susie and Candy. *Conversation* is scored if conversation of a friendly nature occurs between two children for one-half minute or more of the two-minute observation time. In Figure 1, conversation times were entered in seconds on the "friendly" line as conversation occurred. After 30 seconds of recorded conversation, lines were drawn between the upper right sides of the relevant diamonds, or between Janet and Candy and between Janet and Margaret Ann in this instance. The conversation category was not used for I, but was introduced for II because of the authors' judgment of its probable usefulness. The lower right side of a diamond represents *hostile* interaction (verbal or physical approach or response that interferes with the ongoing activity of another child, is a direct attack on another child, or is judged deliberate "snubbing" withdrawal from some approach of another child). Figure 1 shows mutual hostile interactions between Susie and Janet and between Susie and Candy; hostile conversation times marked on these lines were not tabulated. An interaction between Margaret Ann and Susie involved two seconds of hostile conversation on Margaret Ann's part and *attention* (overt but nonverbal recognition by the child of friendly or hostile behavior directed toward him and initiated by another child) from Susie. Attention is recorded, as on Susie's diamond, by attaching the hostile or friendly interaction line to the associative play side (upper left). Attention is not scored; this interaction was counted as hostile for both girls. "No response" to an approach from another child occurred in only 17 records. To record it, the upper point of the diamond is used to attach the interaction line, and the interaction is scored under the initiating category for both children. The encircled numbers in Figure 1 refer to categories of interactions between pairs of *Ss*: 1, associative; 2, friendly; 3, hostile; and 4, conversation. The subscripts are situational and temporal identifications, and the observation in Figure 1 came from the second of a series of such observations done with Group II.

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[2] An additional example and further description may be found in (9).

The time when any child left or joined the children present at the beginning of the two-minute observation time was written beside the child's diamond. For children with one-half minute or more time in the group observed, interactions with all persons were scored; if the child spent less than one-half minute in the area of the group, the interactions were not scored for that child.

Two different scores from these observation records were possible for each child:

A *play interaction score* was obtained by adding the single observation scores in each category of social interaction and then dividing by the total number of minutes of observation for each child. The score for any category in a single observation was the number of children with whom that category of interaction occurred in the two minutes of observation. This score distinguishes the degree to which each child engages in a given category of interaction in spontaneous play.

The *best friend score* is the sum of the weighted choices of the child as best friend in the combined categories of associative play and friendly approach. "Best friends" were limited to those three children with whom the child had the largest number of recorded interactions. This is an observation social acceptance score comparable to the sociometric score and the teacher judgment score, reported in detail in an earlier paper (8). Order of choice was weighted as was done for sociometric and teacher judgment scores, five points for first choice, four points for second choice, etc.

A minimum of 100 minutes of play observation was recorded for each child in each of three observation series: one series for I and two series (a minimum of 200 minutes for each child) for II. Most of the observations of I and of the second sociometric series (IIB) for II followed the fourth and third sociometric tests for these groups respectively. The first series (IIA) for II was recorded before and during the first and second sociometric tests. Observations were made during all preschool hours and activities except those in which spontaneous social interactions between children were not encouraged or could not develop, such as listening to stories, rest, juice or dressing. The children in all observations were in outdoor and indoor free play situations offering a wide choice of companions and activities.

Observer agreement between the authors for 25 joint observations was .92 by the Festinger formula:

$$\frac{\text{Sum agreements}}{\text{Sum agreements} + \frac{1}{2}\ \text{Sum omissions} + \text{Sum disagreements}}$$

and .90 by the formula:

$$\frac{2 \times \text{Sum agreements}}{2 \times \text{Sum agreements} + \text{Sum disagreements}}$$

Sampling reliability of the play interaction score was tested for odd-even split halves of IIA, for equal divisions of time for II, and for outdoor-indoor splits of the records of I. Odd-even Guttman coefficients were all over .90 except associative play (.87) and hostile interaction (.80); four of the 10 computed coefficients were above .95. In spite of differences significant at the .05 level in size of scores (analysis of variance), stability coefficients for IIA and IIB scores tended to be in the range from .87 to .92, and may be described as surprisingly high. In the split of the first 100 minutes of observation records, however, only moderate stability was found (.50 to .81) and differences between the first and second 50-minute scores were significant at the .001 level. Coefficients for the outdoor-indoor splits resembled in magnitude those obtained for the odd-even splits of records; category coefficients ranged from .90 to .92, except associative play at .89 and hostile interaction at .78.

Sampling reliability of best friend scores was studied for only the outdoor-indoor and time splits of records. For I, the correlation coefficient of outdoor-indoor scores for the associative play plus friendly approach combination was .67, lower than the corresponding coefficient of .88 for play interaction scores. Correlation coefficients for best friend scores from the 100-minute and 50-minute time splits of records for II were .64 and .54 respectively, both exceeding the *r* required for independent measures to be significant at the .05 level for this *N*. The Guttman coefficient for the 100-minute split was .78.

By *F* tests, linear regression hypotheses could not be rejected at the .10 level for observation scores on sociometric and teacher judgment scores. Inspection of scattergrams gave no reason to question possibilities of any

TABLE 1

CORRELATION COEFFICIENTS BETWEEN SOCIOMETRIC SCORES AND OBSERVED PLAY INTERACTION SCORES FOR GROUPS I AND II

(sociometric period in Arabic numbers, observation period in Roman numerals)

	GROUP I	GROUP II		
Observation Category†	4, I	1, IIA	2, IIA	3, IIB
A	.47*	.59**	.58**	.64**
FA	.58**	.49*	.52*	.54*
C	..	.39	.49*	.74**
H	.44	—.17	.25	.01
A+FA	.54*	.56*	.58**	.63**
A+FA+H	.52*	.48*	.47*	.58*
A+FA−H	.70**	.62**	.66**	.66**
A−H	.44	.60**	.64**	.66**
FA−H	.60**	.60**	.66**	.64**
A+C	..	.52*	.56*	.69**
FA+C	..	.48*	.54*	.67**
A+FA+C	..	.53*	.57*	.67**
A+FA+C+H	..	.48*	.50*	.64**
A+FA+C−H	..	.57*	.63**	.67**
C−H	..	.39	.51*	.61**
FA+C−H	..	.54*	.62**	.70**
A+C−H	..	.55*	.61**	.67**

* Significant at < .05 level for 17 or 16 (II, 3, IIB) *d.f.*

** Significant at < .01 level for 17 or 16 (II, 3, IIB) *d.f.*

† Observation category letters signify the following: A = Associative Play; FA = Friendly Approach; C = Conversation; H = Hostile.

data not meeting other assumptions essential for use of product-moment correlation procedures.

RESULTS

1. Is the degree of a child's participation in qualitative categories of spontaneous play related to the child's sociometric score and to teacher judgments of social acceptance?

Table 1 summarizes correlation coefficients between sociometric scores and play interaction scores for the two groups at the indicated times. Fifty-two of the 59 coefficients are significant at less than the .05 level, 29 of these at less than the .01 level. Two others are close to significance at the .05 level. When the 36 independent *S*s were treated as a single sample and correlations were computed between the last sociometric scores and observa-

TABLE 2

CORRELATION COEFFICIENTS BETWEEN POOLED TEACHERS' JUDGMENT SCORES AND OBSERVED PLAY INTERACTION SCORES FOR GROUPS I AND II

(teachers' judgment period in Arabic numbers, observation period in Roman numerals)

	GROUP I	GROUP II		
Observation Category†	4, I	1, IIA	2, IIA	3, IIB
A	.63**	.49*	.71**	.79**
FA	.74**	.70**	.65**	.83**
C	..	.40	.50*	.80**
H	.41	.02	.02	.25
A+FA	.71**	.65**	.58**	.85**
A+FA+H	.70**	.60**	.67**	.85**
A+FA−H	.75**	.66**	.74**	.82**
A−H	.55*	.42	.64**	.65**
FA−H	.74**	.74**	.70**	.80**
A+C	..	.47*	.64**	.81**
FA+C	..	.63**	.63**	.86**
A+FA+C	..	.60**	.68**	.86**
A+FA+C+H	..	.58**	.66**	.86**
A+FA+C−H	..	.61**	.70**	.81**
C−H	..	.30	.37	.50*
FA+C−H	..	.64**	.64**	.82**
A+C−H	..	.43	.60**	.72**

* Significant at < .05 level for 17 or 16 (II, 3, IIB) *d.f.*

** Significant at < .01 level for 17 or 16 (II, 3, IIB) *d.f.*

† Observation category letters signify the following: A = Associative Play; FA = Friendly Approach; C = Conversation; H = Hostile.

tion series play interaction scores, both the associative play and friendly approach coefficients were .54, significant below the .01 level. The coefficient for the additive combination of these two scores was .57. By *t* tests, these two single category scores differed from hostile scores in the degree of correlation obtained with sociometric scores, and, of course, did not differ from each other.

As can be noted, hostile social interaction scores were in no instance significantly related to sociometric acceptance, although one *r* approached .05 level of significance. Addition or subtraction of the hostile category did not influence consistently either the direction or size of coefficients for additive combinations of observation categories. For the last test period scores of the 36 *S*s, the nonsignificant coefficient for hostile scores was .08.

Table 2 summarizes similar correlational data for average teacher judgment scores (of social acceptance) and play interaction scores. Here 45 of the 59 coefficients are significant at the .01 level, five are significant at the .05 level and four others closely approach .05 level significance. For the 36 *S*s in the last test period, teacher judgment scores correlated .71 with associative play scores, .61 with friendly approach scores, and .79 with the additive combination of these scores, all coefficients being significant below the .01 level. While for each group and test period in Table 2 the hostile coefficients are nonsignificant, the 36 hostile scores for the last test period correlated positively, .38, and significantly (.05 level) with teacher judgment scores. For this sample, *t* tests indicated rejection of the null hypothesis for the differences between associative play and hostile scores in predicting teacher judgment scores, but not for the differences in prediction between the two friendly scores or between friendly approach and hostile scores.

Sociometric scores and teacher judgment scores did not relate in the same way to play interaction scores for the 36 *S*s. The differences between these two scores were nonsignificant by *t* test in predicting associative play and friendly approach scores. However, the hypothesis of no difference between sociometric scores and teacher judgment scores could be rejected at the .01 level for prediction of a combination score, associative play plus friendly approach, and at the .05 level for prediction of hostile scores.

These data indicate that the degree of a child's participation in all categories of a friendly nature in spontaneous play is positively related to the child's sociometric score and to teacher judgments of social acceptance. Hostile play interactions do not appear to be related to children's sociometric scores, although they may be positively related to teacher judgment scores.

2. Is observed social acceptance in preschool free play predicted by both sociometric scores and teacher judgment scores?

The best friend score furnished the observation evidence of social acceptance comparable to the sociometric and teacher judgment scores. As shown in Table 3, significant relations were not obtained consistently between best friend scores and sociometric scores for the two groups nor

TABLE 3

CORRELATION COEFFICIENTS FOR OBSERVED BEST FRIEND SCORES WITH SOCIOMETRIC AND TEACHER JUDGMENT SCORES

Test Periods	*Teacher Judgment and BFS*	*Sociometric and BFS*
I: 4th test and observation	.62**	.58**
II: 1st test and IIA series	.43	.50*
2nd test and IIA series	.69**	.38
3rd test and IIB series	.62**	.34
36 *Ss*, last tests, observation	.64**	.47**

* Significant at < .05 level.
** Significant at < .01 level.

for the test periods of II; nevertheless, for the 36 *Ss*, the correlation was significant at the .01 level. Relations significant below the .01 level were obtained between best friend scores and teacher judgment scores, excepting the first test and observation period of II. The hypothesis of no difference between the teacher judgment and sociometric scores in the prediction of the best friend score could not be rejected by *t* test for the 36 *Ss*. In separate computations of best friend scores for the hostile category, similar to those of Table 3, the correlations in no instance approached significance.[3] Social acceptance in free play, then, may be said to be moderately predicted by both the sociometric score and the teacher judgment score.

3. Do choices of the child's three best friends in the picture sociometric technique and in the judgment of teachers agree with those observed in play to an extent greater than chance?

To determine whether agreement in choice of the child's three best friends in the three situations (sociometric test, free play, and teachers' judgments) was greater than chance, probabilities of the obtained agreement between any two situations were computed for each child. These probabilities were converted into chi squares, which were then summed for the preschool group to provide the chi squares used as tests of agreement.

By this test, the probability of the agreement obtained between the three best friends as observed in play and those chosen by the child on the sociometric test was below the .001 level for both groups and all test periods. Around 50 per cent agreement in choices consistently corresponded to these probabilities.

Teacher judgments of best friends also agreed beyond the level of chance with children's observed three best friends in all test periods by these chi square tests. For each of the three teachers of I, chi square probabilities were below the .002 level. For the three teachers of II in three test periods, chi square probabilities were below the .003 level in six instances, and the .02 level in two others. Agreements were similar to those reported for sociometric and observed best friends, being around 50 per cent.

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[3] Best friend scores computed for each single interaction category and their combinations are presented in detail in (9).

Summary and Conclusions

This investigation proposed to demonstrate that observed preschool group behavior is related to sociometric scores and to teacher judgments of social acceptance. A method for recording social interactions was devised and it provided reliable quantitative measurement of both social participation and social status. Interactions of each of 19 children of two preschool groups were recorded for a minimum of 100 minutes. The children were given three or four picture sociometric tests at 10-day intervals and teacher judgments of best friends of these children were obtained at times corresponding to the sociometric tests.

The following relations were found between these measures of social acceptance:

1. The degree of the child's participation in social interactions of a friendly nature in spontaneous play was positively related to the child's sociometric score and to teacher judgments of social acceptance. Hostile play interactions were not related to sociometric scores but had some positive relations with teacher judgment scores.

2. Social acceptance in spontaneous play situations was related to both sociometric and teacher judgment measures.

3. Choices of the child's three best friends in the picture sociometric technique and in the judgment of teachers agreed beyond chance with those observed in play.

The authors believe that these results demonstrate the possibility of measuring preschool-aged children's participation in discriminating friendships with other children.

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TYPES OF REACTIONS IN PUNISHMENT SITUATIONS IN THE MOTHER-CHILD RELATIONSHIP

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In an initial study concerned with the direction of aggression in the mother-child punishment situation, the present authors (1) described a newly designed cartoon-type projective device—the Punishment Situations Index (PSI)—developed to assess characteristics of punishment responses in the mother-child relationship. The results of this investigation, interpreted within Rosenzweig's framework of reactions to frustration (2, 3), indicated that the mother-child punishment situations are ones in which the major tendency was either to blame someone else (extrapunitiveness) or to blame oneself (intropunitiveness). It was also reported that the offense (e.g. lying, stealing, disobedience, destruction of parent's property) was infrequently a situation where punishment was evaded or the resulting frustration glossed over. When evasion of punishment did occur, it was most frequently related and described in the children's rather than the mothers' reports. In addition, the hypothesis was sustained that mothers seem more extrapunitive to children than they do to themselves. Mothers emerged as more extrapunitive and children more intropunitive according to both sources.

The present paper concerns itself with the types of reactions of mothers and their children in the punishment situation as they reported them.

SUBJECTS AND PROCEDURE

Each of the 10 pictures of the PSI (one series for boys, another for girls) was presented to 24 elementary school children, 14 girls and 10 boys, between the ages of 9 and 12, and their mothers. For each picture, an individual inquiry consisting of the following questions was conducted with the child and the mother and the answers were recorded verbatim by the interviewer:

1. Has this ever happened to you (with your child)?
2. What did your mother (child) *say* when it happened?
3. What did you *say* when it happened?
4. What did your mother (child) *do* when it happened?
5. What did you *do* when it happened?
6. How do you think your mother (child) *felt* about it?
7. How did *you feel* about it?

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When the PSI is administered to both the child and the mother, four concepts of the punishment situation are obtained: from the child, his concept of himself (CC) and his mother (CM); from the mother, her concept of herself (MM) and her child (MC).

SCORING

The responses to the PSI were scored using the scoring factors developed by Rosenzweig (3). In this study we were particularly interested in the types of reactions in the punishment situation which, according to Rosenzweig, are: (a) obstacle-dominance (O-D), in which the barrier occasioning the frustration stands out in the response; (b) ego-defense (E-D), in which the ego of the subject predominates; and (c) need-persistence (N-P), in which the solution of the frustrating problem is emphasized. The scoring categories for obstacle-dominance (O-D) were *E′*, *I′* and *M′*. Examples of actual responses given by the subjects are shown below:

E′ is scored when the frustrating obstacle is insistently pointed out:

(CC) I never get any money to buy candy.
(CM) You could have gotten killed.
(MC) No use cleanin' it up, it'd get messed up again.
(MM) Look, you have broken my vase.

I′ is scored when the frustrating obstacle is construed as not frustrating, or in some way beneficial, or, subject emphasizes the extent of his embarrassment at being involved in instigating another's frustration.

(CC) I was glad I got it cleaned up.
(CM) She'd be embarrassed about her little boy's taking apples from the store.
(MM) I thought it was just kind of cute.
(MC) She knew better the next time.

M′ is scored when the obstacle in the situation is minimized almost to the point of denying its presence.

(CC) I felt fine, glad she didn't whip me and all.
(CM) She'd just feel neutral.
(MM) No particular thought of it at all.
(MC) She'd just forget about it.

The scoring categories for ego-defense (E-D) were *E*, *I*, and *M*.

E is scored when blame or hostility is turned against some person or thing in the environment.

(CC) I felt she was being mean to me.
(CM) My mother didn't know what she was talking about.
(MM) Will she *ever* learn to behave?
(MC) You're a clumsy little girl.

I is scored when blame and censure are directed by the subject onto himself.

(CC) I needed to be punished.
(CM) She would blame herself.
(MM) I would feel that I hadn't raised her right.
(MC) She would be terribly sorry.

M is scored when blame for frustration (punishment) is evaded altogether, the situation being regarded as unavoidable; in particular, the "frustrating" ("punishing") individual is absolved.

(CC) I didn't blame her very much.
(CM) She'd realize I had no money.
(MM) If he was in the right, I wouldn't do anything to him.
(MC) That's just like a little girl.

The scoring categories for need persistence (N-P) were *e*, *i* and *m*.

e is scored when a solution for the situation is expected of someone else.

(CC) Mother, help me get down.
(CM) She would tell me to get some clothes on.
(MM) Your report card is very bad; you'll have to improve it.
(MC) She would expect me to help her with it.

i is scored when amends are offered by the subject, usually from a sense of guilt, to solve the problem.

(CC) I'd pay for it.
(CM) She would let me watch TV.
(MM) I would pay for the window.
(MC) She would get her books and start studying.

m is scored when expression is given to the hope that time or normally expected circumstances will bring about a solution of the problem; patience and conformity are characteristic.

(CC) I would take the punishment like a man.
(CM) She says I'll get over it.
(MM) They seemed satisfied and I was.
(MC) She would do it without fussing.

RESULTS AND DISCUSSION

After scoring and tabulating the responses under the three categories, Fisher's matched-group *t* tests were computed between the six possible different combinations of *concepts* for O-D, E-D, and N-P. The results of the analyses, shown in Tables 1, 2, and 3, yielded the following conclusions:

TABLE 1

EGO-DEFENSE REACTION IN THE PUNISHMENT SITUATION IN THE MOTHER-CHILD RELATIONSHIP ($N = 24$)

	M_1	M_2	t	*Significance*
MC > MM*	12.77	9.98	2.94	.01
CM > MM	15.06	9.98	3.97	.01
CM > CC	15.06	10.73	2.93	.01
CM > MC	15.06	12.77	1.67	N.S.
CC > MM	10.73	9.98	.67	N.S.
MC > CC	12.77	10.73	1.69	N.S.

* MM = Mother's self-concept; MC = Mother's concept of the child; CC = Child's self-concept; CM = Child's concept of mother.

TABLE 2

OBSTACLE-DOMINANCE REACTION IN THE PUNISHMENT SITUATION IN THE MOTHER-CHILD RELATIONSHIP ($N = 24$)

	M_1	M_2	t	*Significance*
MM > CM	4.54	2.23	3.52	.01
CC > CM	5.00	2.23	3.45	.01
MC > CM	5.06	2.23	4.44	.01
MC > CC	5.06	5.00	.07	N.S.
CC > MM	5.00	4.54	.53	N.S.
MC > MM	5.06	4.54	.72	N.S.

TABLE 3

NEED-PERSISTENCE REACTION IN THE PUNISHMENT SITUATION IN THE MOTHER-CHILD RELATIONSHIP ($N = 24$)

	M_1	M_2	t	*Significance*
MM > MC	10.94	6.38	5.88	.01
MM > CM	10.94	6.85	4.14	.01
MM > CC	10.54	8.85	2.34	.05
CM > MC	6.85	6.38	.47	N.S.
CC > CM	8.85	6.85	1.83	N.S.
CC >MC	8.85	6.38	2.73	.02

1. *Ego Defense.* Table 1 indicates these significant relationships: (a) mothers report that children are more ego-defensive than mothers report themselves to be; (b) children report mothers to be more ego-defensive than mothers report themselves to be; and (c) children perceive their mothers as more ego-defensive than children report themselves to be. Since Rosenzweig asserts that ego-defense reactions occur only under special conditions of ego-threat, it appears from our results that with ego threat there is a tendency to overestimate the ego-defense mechanism in other persons but not in the self. In this connection, it is noteworthy that in the previous study (1) it was found that children also conceived of mothers as being more extrapunitive than mothers conceived themselves as being.

2. *Obstacle-Dominance.* From Table 2 it may be seen that: (a) mothers report themselves as being more obstacle-dominant than children perceive mothers to be; (b) children report themselves that they are more obstacle-dominant than children report mothers to be; and (c) mothers report children as having more obstacle dominance than children report mothers as having. It would seem that the presence of the frustrating obstacle is more important to children in punishment situations than to mothers. And, furthermore, children do not clearly recognize or are unaware that mothers are also frustrated by obstacles in the situation as much as mothers recognize it.

3. *Need-Persistence.* The following conclusions appear to emerge from the findings presented in Table 3: (a) mothers report themselves to be more need-persistent than they perceive their children to be; and (b) mothers report themselves to be more need-persistent than their children perceive them. Need-Persistence is considered by Rosenzweig (2) to occur invariably after frustration; that is, the "fate of the frustrated need is considered." Need-Persistence implies a *solution* to the frustration. It is interesting to note that children do not feel that solutions have been found for the punishment situation as much as mothers believe they have. Perhaps this may point up many mothers' over-all frustration in adequately dealing with disapproved behaviors.

SUMMARY AND CONCLUSIONS

In an effort to assess the types of reactions ocurring in the mother-child punishment situation, 24 children between the ages of 9 and 12 and their mothers were given the Punishment Situations Index. This index, a projective device recently developed to assess the direction of aggression in the punishment situations, consists of 10 cartoons (two series, one for boys and one for girls) depicting situations commonly leading to punishment of the child by his parent. On the basis of analysis made following Rosenzweig, the following conclusions appear warranted:

1. Where ego-threat is present, there is a tendency for both mothers and children to overestimate the ego-defense reaction in the other person, but not in the self.

2. Children appear to be more affected by obstacles in the punishment situations, but fail to recognize the extent of the importance of situational obstacles for their mothers.

3. Mothers regard themselves as seeking a solution to the situation more than children seem to realize they do, but they do not regard their children as seeking a solution as often as they do.

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DEVELOPMENT OF THE CONCEPT OF FLAG AND THE SENSE OF NATIONAL IDENTITY

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PROBLEM

This research had two purposes: The first was primarily descriptive, to trace the development of the concept of flag and the sense of national identity. The second purpose was to assess the applicability of principles of concept formation derived from other studies to a new content area. Of special relevance are the works of Piaget (3, 4, 5), who studied the development of such concepts as space, physical quantity, and moral judgment, and the study of the development of money concepts by Schuessler and Strauss (6). From these studies, two principles of concept formation may be derived: (1) The conjunction of terms and statements of relationship between terms which define the meaning (intension) of a concept is not grasped in its entirety or immediately by the child. (2) The order in which the elements of (intensional) meaning are grasped is fairly stable from child to child.[1] An attempt was made to determine the extent to which these conditions hold for the concept of flag and the sense of national identity.

PROCEDURE

Due to limitations on the scope of the study, direct observation of the developmental process within a longitudinal model was not possible. Instead, a cross-sectional design was used. The subjects were drawn from a Bloomington, Indiana, elementary school and ranged in age from 5 to 12 years (kindergarten through sixth grade). It was expected that this age distribution would produce a fairly broad range of responses, from those indicating only a rudimentary notion of the meaning of flag and country to those indicating a reasonably sophisticated concept. Eight students from each age level were randomly selected from the school population. Of these, two from each age level were used in pretesting the interview schedule leaving 48 in the final sample.

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[1] However, due to factors such as maturation and intelligence, there may be considerable individual variation in the age at which a particular element of intensional meaning is mastered. It is the order, rather than age, that is being stressed here.

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In constructing the interview schedule, a battery of open-ended questions was devised. The open-ended form was chosen in order to minimize the danger of imposing a frame of reference on the children's responses. The battery was administered to the pretest group and, after the usual attrition due to ambiguity or the inability to discriminate, 22 items remained for use in the final interview. The schedule appears below.

INTERVIEW SCHEDULE

1. Suppose someone came to you and said that they had never seen an American flag and asked you what it was like. What would you tell him? What colors is it made of?
2. How many stars and stripes does it have?
3. Where are each of the colors?
4. If you had a piece of cloth and it was just as little as a stamp and was (describe characteristics reported by interviewee), would that be an American flag? If the cloth was three blocks long and two blocks wide, would that be an American flag?
5. If you took a tablecloth and painted it with (characteristics reported), would that be an American flag? Would it be a flag if you left it on the table and used it as a tablecloth? Why?
6. Who made the first American flag? Why do you suppose they wanted to have a flag?
7. Do American ships carry the American flag? Why?
8. Does the flag fly over government buildings? Why?
9. Do only countries have flags? What else have flags?
10. How many different flags are there?
11. Do all countries have a flag? Which flag is best? Why?
12. Would a man that lived in France think the American flag was best? Why? Do all people think their country's flag is best?
13. If you went to another country to visit, could you fly the American flag there? If a government person went to this country on government business, could he fly the American flag there?
14. Does a country always have the same flag or does it change it sometimes? When and why?
15. Suppose the government decided to change the American flag and had it made green and white with a red apple in the middle. Would the new flag be an American flag? Suppose all the people wanted a new flag and it was green and white with a red apple in the middle. Would it be an American flag?
16. Suppose one part of the country got mad at the other part and they went to war. How many different American flags would there be? Why?
17. Do you pledge allegiance to the flag? Why?
18. If you had a flag and it got old and shabby, could you cut it up and use it for rags? Why?
19. Do they put the flag up especially on Washington and Lincoln's birthdays? Do they put it up on every president's birthday? Do they put it up because it's your birthday?
20. Why does the flag fly on a holiday? Do other countries put up their flag when they have a holiday?
21. Do you ever sing songs when they raise the flag? What song? Why?
22. Does the flag always fly at the top of the pole? Could it fly all day at the middle of the pole? Why?

The method of analysis of the responses was focused on the two principles of concept formation mentioned earlier. The first held that the acquisition of a concept is gradual. As the child grows older, he will have had time to come in contact with more of the terms and propositions which define a given concept. Moreover, he will have had time to develop the logical facility necessary to integrate this information into his frame of reference. Thus a high positive correlation is to be expected between age and performance on an interview designed to measure conceptual sophistication. However, such a correlation is only a starting point for the analysis of conceptual development. It may indicate what factors are related to the developmental process but not the ways in which those factors are operating.

TABLE I

PATTERN OF RESPONSE WEIGHTS BY SCALE TYPE AND REPRODUCIBILITY COEFFICIENTS

	SCALE TYPE											
*Item**	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*Scale Errors*	*Reproducibility Coefficient*
22	0	0	0	0	0	0	0	0	0	1	1	98
13	0	0	1	1	1	1	1	1	2	2	4	92
15	0	0	0	1	1	1	1	1	2	2	4	92
5	1	1	1	1	1	1	1	2	2	2	12	76
10	0	1	1	1	2	2	2	3	3	3	5	90
14	0	0	1	1	1	1	1	2	2	2	10	80
11	0	0	1	1	1	1	1	2	2	2	4	92
6	0	1	1	1	1	1	2	2	2	2	5	90
17	0	0	1	1	1	1	2	2	2	2	3	94
9	0	0	1	1	1	1	2	2	2	2	5	90
18	0	0	0	0	0	0	1	1	1	1	1	98
20	1	1	1	1	1	1	2	2	2	2	1	98
19	0	0	1	1	1	2	2	2	2	2	6	88
8	0	1	1	1	1	2	2	2	2	2	4	92
21	1	1	1	1	1	2	2	2	2	2	1	98
3	0	1	1	1	2	2	2	2	2	2	3	94
1	0	0	0	0	1	1	1	1	1	1	1	98
2	0	0	0	0	1	1	1	1	1	1	1	98
12	0	0	1	1	2	2	2	2	2	2	4	92
4	1	1	1	2	2	2	2	2	2	2	4	92
16	0	0	0	1	1	1	1	1	1	1	2	96
7	0	1	2	2	2	2	2	2	2	2	4	92
Frequency	4	8	5	3	4	3	8	7	3	3		
Scale Errors	3	21	11	2	12	7	19	7	3	0	85	
Reproducibility	95	88	90	97	87	90	90	96	95	100		93

* Items are grouped by difficulty, i.e., fewest cases above the highest cutting point.

The second principle held that the order in which the elements of intensional meaning are acquired is not random but fairly stable from child to child. The degree of conceptual facility implied in one level of response consistently serves as a prerequisite for all higher response levels. The order in which a particular element is acquired is a function of its complexity and the degree of abstraction, flexibility, and systematization on the part of the child it requires for comprehension. Schuessler and Strauss (6) point out the analogue between this principle and Guttman's scale analysis. In scale analysis, the coefficient of reproducibilty serves as a measure of the consistency with which one set of responses serves as a prerequisite for another. Hence it affords a means of assessing the applicability of these principles to the content area under investigation.

In order to facilitate scale analysis, the following method was used for ordering the responses to each item. Responses to the open-ended interview were recorded verbatim. They were then categorized and arbitrary weights assigned to each category on the basis of that category's position in a rank order of conceptual sophistication. The weights on all items were then summed for each individual. These sums were arrayed and a scalogram constructed.[2]

In addition, stages in the development of the concept of flag and the sense of national identity were delineated. This was done by isolating portions of the scalogram array where cutting points between item response categories tended to cluster within one or two ranks. These correspond roughly to scale types and are defined as stages or levels of development. The pattern of item response weights for scale types and reproducibility coefficients appear in Table 1.

RESULTS

The first step in the analysis was to determine the relationship of age to interview performance. A zero order correlation of .76 was found between age in months and total scores on the interview. Allowing for variation in such factors as intelligence and rate of maturation, this value falls within the expected range.

The possible effect of sex on interview performance was investigated. No significant difference was observed between the sexes on over-all interview performance.[3] Moreover, the interview responses were scalable for a sample about equally divided between the sexes indicating similar developmental patterns. Although sex roles may involve many differences, obvious or otherwise, there may be certain response organizations where there is little sex difference in developmental patterns. The concept of flag and the sense of national identity seems to be a case in point.

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[2] Two approximations were required before the conventional requirements for scalability were met.

[3] Based on 14 pairs matched by age group, $t = .20$; $p > .05$.

By the method outlined, 10 scale types were delineated and equated with stages of development. It should be pointed out that these stages a not intended as final or immediately generalizable to any broad popul tion. Rather, they are regarded here as a convenient device for pointin out important differences in the response organizations of children a various points along a developmental continuum.

Children at the first level of development (5–6 years) have little more than a name for a class of objects with common physical characteristics. A flag is a flag because "it's got the prettiest colors" or "it's got the little stars." The child at this stage does not know of other countries and denies the possibility of other flags. His vague impressions of the one flag of his experience are generalized to stand for all flags. Behavior toward the flag is wholly confined to using it to sing to or celebrate with (even on his birthday). He has little notion of how this comes about; there is simply a kind of configuration of flag-singing and flag-celebrating.

In the second developmental stage (5–6 years) the child first exhibits a notion of other country. Generally there are two kinds of countries, good and bad. "Other country has a different kind of flag. When we was fighting the bad country they had a different flag." There is some notion of using the flag for purposes of identification, but in quite a limited sense. Flags fly over special places but simply "because they belong there." In the main, flags exist to distinguish good from bad. "God made the flag so they'd know who was the good people." The child exhibits the beginnings of symbolism but the flag is not yet a genuine symbol. Goodness lies *in* the flag by virtue of the goodness of the agent who made it. Flag "belongs" rather than identifies. National identity is a matter of a simple dichotomy; either one belongs to the good country or one does not.

The orientation of children at the third level (7 years) differs markedly from that of children at the previous levels. It seems likely that these differences are due largely to new ways of looking at the same information rather than simply the acquisition of a number of new facts. The child shows significant development in his concept of country. Countries are now differentiated on the basis of geographical areas without the necessity of moral differentiation. They are possessors; they "possess" people, objects, even physical events. The purpose of the flag is to identify proprietorship. It flies "to show it's an American ship" or "It says it's an American government building." People "possessed" by a certain country naturally prefer their own flag. However, "The American flag is best."

Responses of children in the fourth stage (7 years) are generally similar to those in the third. Minor differences occur in knowledge of the characteristics of the American flags and flags in general. There are some major differences centering around the concept of government. Previously, the flag, people, and government "belong" to a country. In this stage, country is corporation with certain assets: people, flag, physical objects, events, and sanctions on people's behavior. The government serves as a board of

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The major improvement in the fifth stage (8 years) is in the notion of a multiplicity of flags. This improvement seems to come from two sources: the notion of levels of government and a better comprehension of the number of other countries. The concept of states, first expressed in the fourth stage, is now more formally verbalized. States, as geographical subdivisions, have governments with administrative functions and flags to identify them. Instead of 10 or 15 other countries, there are now 50 or 60. "I think there are 108. Sixty are the flags of all the different countries and there is one for each one of the states." The American flag is now best because "America is the best country." The United Nations is now involved for some of the children at this stage (probably reflecting school curriculum). "There is two best. There is a blue one that stands for the whole world and a red, white and blue one that is the American flag."

In the sixth stage (8 years) the child begins to grasp the full extent of the symbolism associated with the flag. One sings the national anthem because "It's a way of honoring your country's flag." The flag is put up only on Washington and Lincoln's birthdays because "They were the greatest presidents." Thus raising the flag does not simply stand for president but for the property of being first president or best president. Government is still "keeper of the country." However, the child is now able to verbalize the relationship between such artifacts as the flag and government buildings to the active process of administration. "To show that's where the government is and they make the laws and the country's business there."

The seventh developmental stage (9 years) is characterized by a marked increase in the complexity of the children's responses. The child at this stage has the better notion of country. Country is more than a geographical area with a common administration. It is also a group which has certain common purposes and allegiances. Country has an administrative body, government, which in addition to its internal functions conducts the relations of the group with other countries. The child's concept of flag embodies all of this. He understands more fully that the flag is a conventional symbol. Flags can stand for countries, with broad and general common goals, or for smaller groups such as schools or clubs which have more specific common purposes. National identity is not merely a matter of possession. It now involves an identification with a group and the goals of that group.

In the eighth stage (10 years) the child shows an increase in his ability to handle propositions of abstract loyalty. Children at this stage fully comprehend that flag stands for loyalty to a set of goals and the group holding those goals rather than simply loyalty to government. The American flag is no longer best without qualification. "If I lived in a different country and liked the way things were I probably would think their flag is best." Nor do people inevitably prefer the flag of their own country (or the American flag as the only alternative). "No, there might be people in some countries who liked another country better than their own."

The ninth and tenth developmental stages (11–12 years) are differentiated only by increased knowledge of rituals associated with the flag. At this point in the developmental process the child's verbal organization with respect to flag and national identity is a logical system. The child clearly understands the full implication of convention and is able to incorporate this understanding in responses showing a sophisticated conception of the relationship of convention to flag, people, and government. "Well, I don't think the government could change the flag like that (green and white with a red apple in the middle) unless all of the people agreed to it. If they did, it would be a true American flag because it stood for the American people." He also displays a better understanding of governments as mediating bodies between peoples and the use of the flag to identify this function. "Government people like ambassadors and things who have to work all the time in a foreign country have the American flag outside the place they work to show he's a representative of the American government."

At this level, the child has acquired a number of propositions which he systematically relates by means of several principles of classification. The system is manifested in the child's response to problems which fall within the scope of the classificatory scheme. Its component parts are the child's understanding of country, people, government, and the relationships between them; his understanding of the flag as a symbol, including the notion of a multiplicity of flags and the flag as a means of identification; his understanding of the flag as a conventional symbol which stands for allegiances and purposes; and his understanding of the implications of flag, country, and people for his behavior including the conventional nature of those implications. This system may be thought of as a developed concept of flag and sense of national identity.

Discussion

These data suggest that conceptual development in the area of flag and national identity conforms to the pattern found in other content areas. The acquisition of the concept is gradual as inferred from the correlation between chronological age and interview performance. The elements which define the concept are related in propositions which increase in complexity as the children are older. Scalogram analysis indicated that the order in which the elements are acquired and the types of relationships perceived among them is fairly stable from child to child. This order can be explained as a function of the ability to perform the logical operations necessary to relate a set of terms as well as the availability of information about those terms.

Analysis of the content at each stage of development suggests an interesting parallel between development of the sense of national identity and development of the self. Mead (2), for example, holds that development of the self is predicated upon the awareness of others and their expectations toward one's own behavior. Similarly, identification with one's own country is predicated upon an awareness of other countries and the identification of people within those countries. This awareness develops from a conception of a unilateral relationship (self and specific other) where country possesses person to an identification with the common goals and purposes of a group (generalized other).

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THE RELATION IN YOUNG CHILDREN BETWEEN CHARACTERISTICS OF THEIR PLAYMATES AND CERTAIN ATTRIBUTES OF THEIR SIBLINGS[1,2]

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PROBLEM AND PROCEDURES

The children with whom a youngster plays are doubtless factors in molding his personality and the children he prefers to associate with, as well as those that are available as playmates, are determined in part by his sibs. In addition, it seems likely the child's interest in and attitudes toward his peers are functions in part of the relations with his parents that develop out of the triangular interactions of parent, child, and sib. Since the psychological literature has not given the playmate problem much attention in considering the effects siblings have directly and indirectly upon each others' attitudes and interests, we have selected for study the question of the relation between certain characteristics of the associates or playmates of young children from two-child families and the relative age as well as sex of their sibs. Sex differences in playmate patterns were also given some attention. To be more specific, in addition to the sex of the child, the independent variables in the study are the child's ordinal position in his sibship, the age difference which separates him from his sib, and the sex of the latter. The dependent variables are the age and sex of the children

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played with or preferred as associates, the amount of play with the sib's friends, and the kind of treatment believed to have been received from the latter.

The subjects in the study were 360 five- and six-year-olds from two-child, intact, native-born, white, urban families. The investigation employed a 3×2×2×2 design. Hence, there were 24 matched subgroups. These represent three levels of sib-age difference (under two years, two to four years, and four to six years), two ordinal positions, and two sexes of subject, as

TABLE 1

MEANS AND STANDARD DEVIATIONS OF THE DISTRIBUTIONS OF THE AGES OF THE SUBJECTS AND OF THEIR SIBLINGS—TWENTY-FOUR BASIC GROUPS

DESCRIPTION OF GROUP								
Subject		Sibling	Subject		Sibling		Sibling Age Difference	
Sex	*Ordinal Position*	*Sex*	*Mean*	*Sigma*	*Mean*	*Sigma*	*Mean*	*Sigma*
			I. SIBLING AGE DIFFERENCE 7–24 MONTHS					
M	2	M	71	6.7	89	8.0	18	4.6
M	2	F	70	6.2	88	7.3	18	3.4
F	2	M	69	7.9	88	7.2	19	3.4
F	2	F	71	8.6	90	7.1	19	4.0
M	1	M	72	6.4	53	7.5	19	3.5
M	1	F	70	7.8	53	9.8	17	3.9
F	1	M	73	5.2	56	6.6	17	4.8
F	1	F	72	6.3	53	7.7	19	3.6
			II. SIBLING AGE DIFFERENCE 25–48 MONTHS					
M	2	M	70	6.2	104	9.2	34	6.6
M	2	F	71	6.1	111	8.6	40	6.0
F	2	M	71	6.5	106	10.2	35	6.8
F	2	F	74	5.0	110	7.2	36	5.7
M	1	M	72	6.5	37	8.8	35	6.6
M	1	F	73	5.6	35	9.0	38	7.5
F	1	M	71	7.3	35	11.2	36	6.6
F	1	F	71	6.2	36	6.0	35	7.1
			III. SIBLING AGE DIFFERENCE 49–72 MONTHS					
M	2	M	69	6.4	128	8.4	59	7.2
M	2	F	74	6.2	132	10.7	58	6.6
F	2	M	73	5.0	126	8.0	53	5.1
F	2	F	68	4.9	124	7.3	56	5.8
M	1	M	74	6.7	19	5.7	55	6.1
M	1	F	73	6.9	17	6.2	56	5.3
F	1	M	73	6.1	17	6.0	56	4.4
F	1	F	75	4.8	17	6.3	58	7.0

well as two sexes of sibling.[3,4] There were 15 subjects in each of the 24 basic groups. Each group was matched individual by individual with every other in age of child, socioeconomic level of the child's father's occupation (1), and neighborhood of residence of the family (10). Tables 1 to 4 describe the groups so that the reader may judge of the degree of success achieved in the matching. About 84 per cent of the age matchings were within six months; 85 per cent of the occupation matchings within one occupation-scale level (1); and 70 per cent of the neighborhood matchings within one rank on the neighborhood scale (10). Level 4 of the occupation scale, the farming group, was omitted because our subjects were all urban children.

TABLE 2

DISTRIBUTION OF THE SUBJECTS IN TWENTY-FOUR BASIC GROUPS IN TERMS OF FATHER'S OCCUPATION

DESCRIPTION OF GROUP			7–24 *Months between Siblings*						25–48 *Months between Siblings*						49–72 *Months between Siblings*					
Subject		Sibling	CLASS OF FATHER'S OCCUPATION																	
Sex	*Ordinal Position*	*Sex*	*I*	*II*	*III*	*V*	*VI*	*VII*	*I*	*II*	*III*	*V*	*VI*	*VII*	*I*	*II*	*III*	*V*	*VI*	*VII*
M	2	M	7	1	2	5	.	.	5	2	2	6	.	.	3	2	3	6	.	1
M	2	F	1	3	5	5	1	.	4	3	2	4	2	.	2	4	3	4	1	1
F	2	M	4	2	4	5	.	.	4	3	2	4	2	.	2	4	5	4	.	.
F	2	F	3	2	5	4	1	.	2	3	5	5	.	.	3	3	4	3	2	.
M	1	M	4	3	3	3	2	.	4	2	3	6	.	.	4	4	4	2	1	.
M	1	F	6	.	4	4	1	.	4	3	2	5	1	.	3	2	4	2	3	1
F	1	M	2	2	6	5	.	.	5	3	1	4	2	.	1	2	6	4	1	1
F	1	F	2	4	3	6	.	.	4	2	5	4	.	.	3	4	4	3	.	1

The children were drawn chiefly from the public schools of Chicago, with only one private school system, the University of Chicago Laboratory Schools, contributing subjects. Usually only one sib from a pair was studied. References (4, 5, 6) give a discussion of some of the matching and sampling problems. We were torn over controlling, for instance, neighborhood of residence because of the suspicion that this tends to vary with the ordinal position of the child, the second child being more likely to be reared in a

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[3] We shall often refer to the groups in code as follows: The first letter and number will indicate the sex of the child subject and his ordinal position in his sibship, the second letter the sex of the sibling, and the numbers in parentheses the age difference in months which separates the child from his sib. Thus, M2F(25-48) refers to the group of second-born boys who have one sister within two to four years older.

[4] The reader should have it called to his attention that (1) what we have labeled a sib-spacing variable includes, in the case of the first-borns, also a duration-of-contact variable, and (2) that the second-borns in this study were the youngest in their sibships and may not be taken as representative of second-borns who have younger sibs.

neighborhood where more child playmates are available than were available to the first child in his early years. If this is the case, the vector is quite apart from the very direct influence of the first child on the playmates available to the second. Furthermore, families change their attitudes toward the child's associates the more children they have. For instance, greater care may be taken in the case of the first child to select for him playmates of his own sex and to control carefully his contacts. There are numberless of these background effects that are doubtless correlated to some degree with one or another of the sib variables we are exploring. The reader should keep these in mind, and, in spite of the many variables on which our groups are matched, not attribute to direct face-to-face influence of the sib all of the relations to be observed in our data. Also, to what extent our findings are applicable to age levels other than the one explored is a question.

TABLE 3

DISTRIBUTION OF THE SUBJECTS IN TWENTY-FOUR BASIC GROUPS IN TERMS OF NEIGHBORHOOD OF RESIDENCE

DESCRIPTION OF GROUP			*7–24 Months between Siblings*					*25–48 Months between Siblings*					*49–72 Months between Siblings*				
Subject		Sibling	SOCIO-ECONOMIC CLASSIFICATION OF NEIGHBORHOOD OF RESIDENCE														
Sex	*Ordinal Position*	*Sex*	*1*	*2*	*3*	*4*	*5*	*1*	*2*	*3*	*4*	*5*	*1*	*2*	*3*	*4*	*5*
M	2	M	11	3	.	1	.	7	4	.	2	2	10	3	1	.	1
M	2	F	7	3	.	3	2	9	1	4	.	1	8	2	1	4	.
F	2	M	9	4	1	1	.	8	1	3	2	1	9	3	1	1	1
F	2	F	9	4	.	2	.	6	2	2	5	.	7	4	1	2	1
M	1	M	10	1	1	2	1	9	.	5	1	.	9	.	3	2	1
M	1	F	9	1	3	2	.	7	1	4	3	.	7	2	4	2	.
F	1	M	10	.	3	1	1	7	4	3	1	.	12	.	1	2	.
F	1	F	7	3	1	2	2	6	4	4	1	.	12	.	1	2	.

The data being reported were obtained from an interview with the children. The subjects were interviewed individually while they played with toys which the interviewer provided. Most of the youngsters were reasonably communicative, though for the accuracy of some of their judgments—e.g., quantity judgments—we cannot vouch. What is being reported is what the children *said*. We are sure of no systematic errors in our data because of semantic considerations; however, it is possible that the first-born's idea of what was much or little association with his sib or the latter's friends was based on a different standard from that to which the second-born referred his judgments. Each child was asked in the interview each question in a standard series and although, in the main, a given order was followed, the questions were embedded in the general conversation as the

TABLE 4

NUMBER OF SUBJECTS IN EACH OF THE BASIC AND COMBINATION GROUPS

DESCRIPTION OF GROUP			AGE DIFFERENCE BETWEEN SUBJECT AND SIBLING IN MONTHS			
Subject		Sibling				
Sex	*Ordinal Position*	*Sex*	*7–24*	*25–48*	*49–72*	*Total*
M	2	M	15	15	15	45
M	2	F	15	15	15	45
F	2	M	15	15	15	45
F	2	F	15	15	15	45
M	1	M	15	15	15	45
M	1	F	15	15	15	45
F	1	M	15	15	15	45
F	1	F	15	15	15	45
M	2	M or F	30	30	30	90
F	2	M or F	30	30	30	90
M	1	M or F	30	30	30	90
F	1	M or F	30	30	30	90
M or F	2	M	30	30	30	90
M or F	2	F	30	30	30	90
M or F	1	M	30	30	30	90
M or F	1	F	30	30	30	90
M	1 or 2	M	30	30	30	90
M	1 or 2	F	30	30	30	90
F	1 or 2	M	30	30	30	90
F	1 or 2	F	30	30	30	90
M	1 or 2	M or F	60	60	60	180
F	1 or 2	M or F	60	60	60	180
M or F	1 or 2	M	60	60	60	180
M or F	1 or 2	F	60	60	60	180
M or F	2	M or F	60	60	60	180
M or F	1	M or F	60	60	60	180
M or F	1 or 2	M or F	120	120	120	360

interviewer saw fit. Also slight variations in question form were permitted if the child appeared not to understand the standard question.

The questions concerned the age and sex of the children played with in out-of-school hours, the child's preference as to age and sex of playmate, the age and sex characteristics of the child named as best friend and as best-liked playmate, the amount the child believed he played with his sib's friends, and the kind of treatment he thought he received from the latter.

The formula used to test the significance of group differences was

$$\frac{p_1 - p_2}{\sqrt{\frac{2pq}{n}}}.$$

(*See* 9, p. 76.) The incidences of various responses among the replies from the children in the various groups are given in Tables 5–14. At the bottom of the tables we have listed only the group percentage differences which are significant at the 5 per cent point or better.[5]

Alleged Amount and Quality of the Association with the Sib's Friends

It was no surprise to learn, when the children were asked whether they played much (a lot), sometimes (every once in a while), or very little (practically never) with the sib's friends that, as the sib age disparity widened, the children affirmed with increasing frequency they played little (Table 5), and with decreasing frequency they played much, with the latter's friends. The drop in degree of association with the sib's friends (or increase in report of very infrequent association) seemed to be greater in the case of those with a sister than of those with a brother (Table 5).

Zero to 47 per cent of the children, depending on the group (mean per cent for all the groups equals 17), maintained they played much with the sib's friends; while 27 to 100 per cent (mean, 58 per cent) asserted that they played very seldom or practically never. Even when the children differed less than two years in age, they did not report much association with the sib's friends. At this sib-age-difference level about a fourth of the children thought of themselves as playing occasionally, and 45 per cent as associating rarely, with the sib's playmates. Whatever these quantities may mean, it is apparent the children did not believe they had much intercourse with their sib's friends. Possibly the sibs did not have many friends—a condition likely to occur if the sibs are very young. Possibly, frustrated wishes made the contacts the children had seem limited. Possibly, a semantic variable is operating. Possibly, even, the children could not tell what friend belonged to the sib and what to them. In any case, it does appear reasonably clear that the wider the spacing the more those in a pair of sibs tended to go their own ways or failed to share associates, if they had any (Table 5). This latter general relation is, of course, what we had anticipated and we see it, for instance, as lying back of such findings as the positive correlation between magnitude of spacing and leadership reported in another study (6).

There seem to be no simple ordinal-position or sex differences in the frequency of report of different amounts of play with the sib's friends (Table 5). At the wide spacing, however, a significant relation to the

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[5] We are indebted to Dr. Helen Heath for devising a method for testing the significance of the interactions. It should also be noted that, although our groups were matched, the error-of-the-difference term is computed on the basis of the assumption of uncorrelated groups. Hence, the estimates of the significance of differences are conservative ones. We may be guilty of Type B errors, i.e., assuming no significant relation when there is one.

TABLE 5

PERCENTAGE OF CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS WHO ALLEGED THEY PLAYED LITTLE, A MODERATE AMOUNT, OR MUCH WITH THE SIBLING'S FRIENDS

DESCRIPTION OF GROUP			ALLEGED AMOUNT OF PLAY WITH SIBLING'S FRIENDS											
Subject		Sibling	Little (per cent)				Medium (per cent)				Much (per cent)			
			AGE DIFFERENCE IN MONTHS BETWEEN SUBJECT AND SIBLING											
Sex	*Ordinal Position*	*Sex*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*
M	2	M	40	60	47	49.0	40	20	33	31.0	20	20	20	20.0
M	2	F	47	67	73	62.3	27	20	14	20.0	27	13	13	17.7
F	2	M	60	73	53	62.0	13	27	40	26.7	27	0	7	11.3
F	2	F	40	47	60	49.0	33	33	33	33.0	27	20	7	18.0
M	1	M	60	60	60	60.0	7	33	27	22.3	33	7	13	17.7
M	1	F	27	47	100	58.0	26	26	0	18.0	47	27	0	24.7
F	1	M	40	73	73	62.0	47	27	20	31.3	13	0	7	6.7
F	1	F	47	53	80	60.0	7	27	20	18.0	47	20	0	22.3
M	2	M or F	43.5	63.5	60.0	55.7	33.5	20.0	23.5	25.6	23.5	16.5	16.5	18.8
F	2	M or F	50.0	60.0	56.5	55.5	23.0	30.0	36.5	29.8	27.0	10.0	7.0	14.7
M	1	M or F	43.5	53.5	80.0	59.0	16.5	29.5	13.5	19.8	40.0	17.0	6.5	21.2
F	1	M or F	43.5	63.0	76.5	61.0	27.0	27.0	20.0	24.7	30.0	10.0	3.5	14.5
M or F	2	M	50.0	66.5	50.0	55.5	26.5	23.5	36.5	28.8	23.5	10.0	13.5	15.7
M or F	2	F	43.5	57.0	66.5	55.7	30.0	26.5	23.5	26.5	27.0	16.5	10.0	17.8
M or F	1	M	50.0	66.5	66.5	61.0	27.0	30.0	23.5	26.8	23.0	3.5	10.0	12.2
M or F	1	F	37.0	50.0	90.0	59.0	16.5	26.5	10.0	17.6	47.0	23.5	0.0	23.5
M	1 or 2	M	50.0	60.0	53.5	54.5	23.5	26.5	30.0	26.7	26.5	13.5	16.5	18.8
M	1 or 2	F	37.0	57.0	86.5	60.1	26.5	23.0	7.0	18.8	37.0	20.0	6.5	21.2
F	1 or 2	M	50.0	73.0	63.0	62.0	30.0	27.0	30.0	29.0	20.0	0.0	7.0	9.0
F	1 or 2	F	43.5	50.0	70.0	54.5	20.0	30.0	26.5	25.5	37.0	20.0	3.5	20.2
M	1 or 2	M or F	43.5	58.5	70.0	57.3	25.0	24.8	18.5	22.8	31.8	16.8	11.5	20.0
F	1 or 2	M or F	46.8	61.5	66.5	58.3	25.0	28.5	28.2	27.2	28.5	10.0	5.2	14.6
M or F	1 or 2	M	50.0	66.5	58.2	58.2	26.8	26.8	30.0	27.9	23.2	6.8	11.8	13.9
M or F	1 or 2	F	40.2	53.5	78.2	57.3	23.2	26.5	16.7	22.1	37.0	20.0	5.0	20.7
M or F	2	M or F	46.8	61.8	58.2	55.6	28.2	25.0	30.0	27.7	25.2	13.2	11.8	16.7
M or F	1	M or F	43.5	58.2	78.2	60.0	21.7	28.2	16.8	22.2	35.0	13.5	5.0	17.8
M or F	1 or 2	M or F	45.1	60.0	68.2	57.8	24.9	26.6	23.4	24.9	30.1	13.4	8.4	17.3

Significant Differences

	p
Play Little with Sib's Friends	
Spacing (7-24) vs. (25-48)	< .05
Spacing (7-24) vs. (49-72)	< .01
Interaction—sib's sex, spacing (7-24) vs. (49-72)	< .05
Interaction—sib's sex, spacing (25-48) vs. (49-72)	< .01
Play Medium Amount with Sib's Friends	
Interaction—child's sex, sib's sex, ordinal position, spacing (7-24) vs. (25-48)	< .05
Interaction—child's sex, sib's sex, ordinal position, spacing (7-24) vs. (49-72)	< .05
Play Much with Sib's Friends	
Spacing (7-24) vs. (49-72)	< .01
Interaction—sib's sex, spacing (25-48) vs. (49-72)	< .05

former variable is noted. The relative lack of relation to ordinal position was not predicted because it seemed reasonable to expect that the older sib would have more friends—i.e., he could share if he would—while the younger sib might be unable to do so because he had no, or very few, real friends, being too young. In the groups in which the sib was youngest (wide spacing, first-borns) our expectation was indeed confirmed, for here very infrequent association with the sib's friends was reported with a higher incidence by the first-borns than by the second children, and especially rare association, if the sib of the first-born was a female. It is worthy of note in connection with the above observations that, although few ordinal-position-group differences obtained in the matter of affirmed association with the sib's friends, the incidence of first-borns who expressed the opinion that they rarely played with the sib himself was less than the incidence of second-borns (data presented in an, as yet, unpublished reference), but it was the latter who the more frequently said they preferred to play with the sib than with other children. The above relations suggest that the lack of extensive ordinal-position-group differences in alleged frequency of association with sib's friends may result partly because freer access, or possibly even, greater inclination toward intercourse may, in the case of certain groups, be counterbalanced by less opportunity, the sib having fewer friends, or by rejection by the sib's friends.

At the close and middle spacings, with the exception of second-born boys, a higher incidence of the children with a female sib stated that they played much with the associates of the sib than did the children with a male sib, whereas at the wide spacing the trend was reversed, the latter difference, however, being slight. Congruently, a trend opposite to the above is to be noted when the report concerned very infrequent association with the sib's friends (Table 5). One hypothesis that might be offered for the phenomena just described is that when the spacing is not too wide, children tend to play with the sister's friends more than with the brother's, partly because sisters, especially first-borns, play more at home than do brothers. The relations outlined may, however, have other explanations. It seems not improbable, for instance, that the children may reject the brother's friends more than the sisters because the former's associates tend to be more vigorous, competitive, and combative, being predominantly male. It is relevant to note here that the teachers judged boys more hostile, exhibitionistic, and given to teasing (6). Though we think both hypotheses cogent, one might defend the converse of the one stated above, namely that the brother's friends may be more rejecting of *his sib* than the sister's friends are of *her sib* (12). Apropos of both hunches, let us call attention to the fact, though the difference is not quite significant, that first-borns whose sib was male affirmed more often that they felt badly treated by the latter's friends than did first-borns whose sib was a female (Table 6). The same condition obtained also in the case of second-born females in relation to first, but a contrary trend held for second-born males. A tendency

TABLE 6

PERCENTAGE OF CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS WHO ALLEGED THEY WERE TREATED BADLY, INDIFFERENTLY, OR WELL BY THE SIBLING'S FRIENDS

DESCRIPTION OF GROUP			QUALITY OF TREATMENT RECEIVED FROM SIBLING'S FRIENDS											
Subject		Sibling	Bad (per cent)				Indifferent (per cent)				Good (per cent)			
			AGE DIFFERENCE IN MONTHS BETWEEN SUBJECT AND SIBLING											
Sex	*Ordinal Position*	*Sex*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*
M	2	M	27	27	27	27.0	33	26	40	33.0	40	47	33	40.0
M	2	F	40	57	47	48.0	33	29	33	31.7	27	14	20	20.3
F	2	M	40	40	33	37.7	20	13	20	17.6	40	47	47	44.7
F	2	F	27	20	20	22.3	33	33	40	35.4	40	47	40	42.3
M	1	M	20	13	20	17.7	53	40	27	40.0	27	47	53	42.3
M	1	F	13	27	0	13.3	34	20	13	22.4	53	53	87	64.3
F	1	M	20	27	20	22.3	53	20	13	28.7	27	53	67	49.0
F	1	F	7	7	7	7.0	13	06	06	8.3	80	87	87	84.7
M	2	M or F	33.5	42.0	37.0	37.5	33.0	27.7	36.5	32.3	33.5	30.5	26.5	30.2
F	2	M or F	33.5	30.0	26.5	30.0	26.5	23.0	30.0	26.5	40.0	47.0	43.5	43.5
M	1	M or F	16.5	20.0	10.0	15.5	43.6	30.0	20.0	31.2	40.0	50.0	70.0	53.3
F	1	M or F	13.5	17.0	13.5	14.7	33.0	13.0	9.5	18.5	53.5	70.0	77.0	66.8
M or F	2	M	33.5	33.5	30.0	32.3	26.5	19.5	30.0	25.6	40.0	47.0	40.0	42.3
M or F	2	F	33.5	38.5	33.5	35.2	33.0	31.0	36.5	33.4	33.5	30.5	30.0	31.3
M or F	1	M	20.0	20.0	20.0	20.0	53.0	30.0	20.0	34.3	27.0	50.0	60.0	45.7
M or F	1	F	10.0	17.0	3.5	10.2	23.5	13.0	9.5	15.3	66.5	70.0	87.0	74.5
M	1 or 2	M	23.5	20.0	23.5	22.3	43.0	33.0	33.5	36.5	33.5	47.0	43.0	41.2
M	1 or 2	F	26.5	42.0	23.5	30.7	33.5	24.5	23.0	27.0	40.0	33.5	53.5	42.3
F	1 or 2	M	30.0	33.5	26.5	30.0	36.5	16.5	16.5	23.2	33.5	50.0	57.0	46.8
F	1 or 2	F	17.0	13.5	13.5	14.7	23.0	19.5	23.0	21.8	60.0	67.0	63.5	63.5
M	1 or 2	M or F	25.0	31.0	23.5	26.5	38.2	28.8	28.3	31.8	36.8	40.2	48.2	41.7
F	1 or 2	M or F	23.5	23.5	20.0	22.3	29.8	18.0	19.8	22.5	46.8	58.5	60.2	55.2
M or F	1 or 2	M	26.8	26.8	25.0	26.2	39.8	24.8	25.0	29.9	33.5	48.5	50.0	44.0
M or F	1 or 2	F	21.8	27.8	18.5	22.7	28.2	22.0	23.0	24.4	50.0	50.2	58.5	52.9
M or F	2	M or F	33.5	36.0	31.8	33.8	29.8	25.5	33.2	29.5	36.8	38.8	35.0	36.9
M or F	1	M or F	15.0	18.5	11.8	15.1	38.2	21.5	14.8	24.8	46.8	60.0	73.5	60.1
M or F	1 or 2	M or F	24.2	27.2	21.8	24.4	34.0	23.5	24.0	27.1	41.8	49.4	54.2	48.5

Significant Differences	*p*
Treated Badly	
Ordinal position	$<$ .01
Interaction—child's sex, sib's sex	$\cong$ .01
Treated Indifferently	
Interaction—sib's sex, ordinal position	$<$ .01
Interaction—ordinal position, spacing (7-24) vs. (49-72)	$<$ .05
Treated Well	
Child's sex	$<$ .05
Ordinal position	$<$ .01
Interaction—sib's sex, ordinal position	$<$ .01
Interaction—ordinal position, spacing (7-24) vs. (49-72)	$<$ .05

the reverse of the one just sketched was evident, consistently enough, when excellent treatment was the item investigated (Table 6). Somewhat difficult to reconcile with the second hypothesis stated above, however, is the observation that second-born males with a male sib tended to allege good treatment at the hands of the sib's friends more often, and associated more with the sib's friends, than did those males with an older sister (Tables 6, 5). Strangely also, the M2F's, of all the male groups, expressed with the highest frequency a preference for play with girls (Table 11). The boy with an older sister, hence, seems very ambivalent to her and she probably with respect to him. Consistent with the latter hunch is the fact that the girl with a younger brother (this is the sib type of the M2F's) confessed with the highest frequency of all female groups that she preferred to play with someone other than her sib and also that she would rather play alone than play with the sib (data not yet published). Among males sex distance seems to make itself felt to a greater degree in second-borns than firsts, (*see also* 3). The boy seems upset more by an older sister and her friends than by a younger. A similar ordinal-position difference in the case of the girls is not clearly apparent.

It is interesting that the M2F's, of all groups, named the fewest playmates (Table 7). Possibly this group was more indulged and protected by their mothers and, hence, more frequently felt abused by their peers or were less confident they could hold their own with the latter. These boys also seemed not too comfortable in their sex identification.

We confess, when we asked the children about playing with the sib's friends, we wondered whether those near to the sib in age could discriminate who was whose friend. Possibly, the first-born boys recognized the sib's friends as different from their own more readily when the sib and associates were opposite in sex and thus the boys may have reported more association with the sib's friends when the sib was female than when male. However, if this hunch is correct, one might expect a similar mechanism to operate in the case of girls with a brother but the results here are not congruent with the expectation (Table 5).

About half of the children (14 to 87 per cent, depending on the group) asserted they were treated well by the sib's friends; a fourth, that they were treated indifferently or only sometimes were dealt with badly; and about a fourth, that they were generally abused by the sib's friends (Table 6). The question form was, "Do ———'s friends usually treat you well (nice)? Or do they usually treat you badly? Or do they treat you badly only sometimes (only once in a while)?" If the question was not understood, we asked "Are ———'s friends usually nice to you, or are they usually not nice? Or are they sometimes nice and sometimes not?" To a greater degree, as the sib age disparity expanded, the first-borns affirmed they fared well at the hands of the sib's friends. These older children were, no doubt, held in esteem by the younger sib's playmates because of the prestige of age. First-borns, generally, with a higher incidence than second-borns, declared their association with the sib's friends were pleasant and, conversely, fewer thought the friends were abusive. Thus, the younger children in the sib pairs more frequently felt ill-treated.

As implied earlier, when the sibs were opposite in sex, the frequency of affirmation of bad treatment by the sib's coterie of friends was higher than when the sibs were of the same sex. (About 30 per cent of the former and 18 per cent of the latter confessed abuse; *see* Table 6.) We think inter-sex rivalry, or what we have called sex distance (3), is operating to produce this result. Since the reverse pattern is not to be observed in the case of first-born boys and second-born girls, when the affirmation of good treatment is the variable focused upon, this may leave us with something to explain. It is possible that the boy, when he is older than his girl associates, is likely, even if quite young, to show some "chivalry" and the girl may succumb to amorous interests. When we talked with the children, dozens of times they spoke seriously of their girl friends or boy friends. Perhaps, hence, the girl with an older brother is the recipient of "chivalry" and devotion from some of his friends and thus feels fairly well treated. The obverse picture we see in the boy with a younger sister. Being older he may react chivalrously or loyally to some of the younger sister's friends as well as be the recipient of devotion from some of these. As stated, it seems probable that it is when the male is the older that appreciative and cooperative attitudes may be exhibited in relation to some of his sib's friends, if they are girls, which, of course, they are more likely to be, if the sib is a girl. The boy's rivalrous attitudes, on the other hand, we should expect to be more in evidence if he is younger than the sib's friends and fighting for status. This may account for the jealousy and rivalry of the M2F's, reported by the teachers (6), as well as their feeling of abuse, and the corresponding jealousy and rivalry of F1M's, who may be the targets of the younger brother's envious boy companions.

The F1F's most frequently (incidence about 85 per cent) felt the sib's friends were friendly, while the M2F's least often reported good treatment (20 per cent) (Table 6).

It is interesting that boys less frequently than girls believed they were dealt with very appreciatively by the sib's playmates but not significantly more frequently that they were treated very badly (Table 6). The boys, because they tend to be more combative, may actually experience more rejection than the girls. [Teachers judged the girls more popular (6). *See also* Tuddenham (15).] But, because they are more rough-and-tumble in their activities, they may not see so readily the sib's friends' behavior as abusive.

It is worthy of comment that if our 24 groups are ranked on the basis of alleged infrequency of association and of frequency of report of bad treatment from the sib's friends and these two sets of ranks are correlated, the rho equals only +.09. Hence, the two measures, treatment quality and amount of association, seem quite independent. Possibly the more the children played together the more opportunities there were, in the main, for clashes [*see* Green (2); Murphy (11)]. This relation may have countered or masked other positive influences.

Following is a brief summary of the findings of this section: (1) As the sib age difference increased, our subjects, whether first- or second-born, reported they played less frequently with their sib's friends. (2) Our subjects did not seem to think they associated much with the sib's friends. In no case did as many as half of a group express the belief association was very frequent. (3) The incidence of report of much play with the sib's friends was higher among the children, whether male or female, with a

TABLE 7

MEAN NUMBER OF CHILDREN NAMED AS PLAYMATES BY CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS

DESCRIPTION OF GROUP			AGE DIFFERENCE BETWEEN SUBJECT AND SIBLING IN MONTHS			
Subject		Sibling				
Sex	*Ordinal Position*	*Sex*	*7–24*	*25–48*	*49–72*	*Total*
M	2	M	3.93	3.53	4.33	3.93
M	2	F	3.73	3.67	3.73	3.71
F	2	M	4.07	4.60	4.13	4.26
F	2	F	3.73	4.00	4.27	4.00
M	1	M	4.47	4.13	3.72	4.11
M	1	F	4.40	4.00	3.60	4.00
F	1	M	4.60	3.80	4.87	4.42
F	1	F	4.93	4.07	4.07	4.36
M	2	M or F	3.83	3.60	4.03	3.82
F	2	M or F	3.90	4.30	4.20	4.13
M	1	M or F	4.44	4.06	3.66	4.05
F	1	M or F	4.76	3.94	4.47	4.39
M or F	2	M	4.00	4.06	4.23	4.10
M or F	2	F	3.73	3.84	4.00	3.86
M or F	1	M	4.54	3.96	4.30	4.27
M or F	1	F	4.66	4.04	3.84	4.18
M	1 or 2	M	4.20	3.84	4.02	4.02
M	1 or 2	F	4.06	3.84	3.66	3.85
F	1 or 2	M	4.34	4.20	4.50	4.35
F	1 or 2	F	4.33	4.04	4.17	4.18
M	1 or 2	M or F	4.13	3.83	3.84	3.93
F	1 or 2	M or F	4.33	4.12	4.34	4.26
M or F	1 or 2	M	4.27	4.02	4.26	4.18
M or F	1 or 2	F	4.20	3.94	3.92	4.02
M or F	2	M or F	3.86	3.95	4.12	3.98
M or F	1	M or F	4.60	4.00	4.06	4.22
M or F	1 or 2	M or F	4.23	3.98	4.09	4.10

sister 7 to 48 months younger than among the children with a brother 7 to 48 months younger. (4) About half of the children said they were dealt with well by the sib's friends and about a fourth that they were usually abused. (5) Girls more often than boys thought the sib's associates accepting and cooperative but, while sex differences were significant in the incidence of report of very friendly treatment, they were not significant in the case of the frequency of report of abuse. (6) Second-borns confessed they fared less well at the hands of the sib's friends than did first-borns. (7) Among those with a sister, ordinal-position differences in alleged excellent treatment from the sib's associates were significant (1 > 2), whereas, in the case of those children with a brother, ordinal-position differences were negligible. (8) First-borns, in the groups with the wider sib-age disparity, more frequently viewed the sib's friends as accepting, while second-borns showed no spacing-group differences. (9) If the sib was of the opposite sex, it was maintained more often by the child that the sib's friends were abusive than if the sib was of the same sex. (10) Boys with a younger sister more often thought they were treated well by the sib's friends than did boys with a younger brother but the reverse sib's-sex-group relation obtained among second-born boys. (11) If the measures paired are for groups, the reported frequency of association with the sib's friends and the alleged quality of treatment received from the latter were not significantly correlated.

NUMBER OF PLAYMATES

When the children were asked to name their playmates, they mentioned, depending on the subgroup, 3.53 to 4.93, on the average (Table 7). The number of playmates a child listed did not seem correlated to a significant degree with any of the sibling characteristics studied. It may be worth noting, however, that M2F's, quite consistent with other data we have offered (6), reported, on the average, the fewest playmates, while F1M's, the sib type of the M2F's, mentioned the most. Girls generally named more friends or playmates than did boys. We might think this a mere friendship-standard difference in the two sexes and no correlate of the actual, were it not for the fact the girls were judged by their teachers more friendly to their peers than were the boys (6).

RELATIVE AGE OF CHILD ASSOCIATES AND FRIENDS

We were often surprised, when we asked the question, "Who is your very best friend?," to find that the children not infrequently specified some adult. When we made it clear it was the best friend among children we wanted to know about, we discovered that the child named was often one who was no longer currently available because he had moved away, or had been met some time before at a camp, on a trip, or on a visit to relatives. Possibly "absence makes the heart grow fonder" or in a brief association, relations do not get beyond the best-foot-forward or idyllic stage and so are remembered very fondly. At any rate, because we knew that the best friend did not necessarily represent a choice among the child's present contacts, we also asked which child among all the playmates who

TABLE 8

PERCENTAGE OF PLAYMATES NAMED BY THE CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS WHO WERE ALLEGED TO BE OLDER, ABOUT THE SAME AGE, OR YOUNGER THAN THE SUBJECT

DESCRIPTION OF GROUP			RELATIVE AGE OF PLAYMATES NAMED											
Subject		Sibling	Older (per cent)				Same Age (per cent)				Younger (per cent)			
			AGE DIFFERENCE IN MONTHS BETWEEN SUBJECT AND SIBLING											
Sex	*Ordinal Position*	*Sex*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*
M	2	M	43	40	35	39.3	36	48	43	42.3	21	12	22	18.3
M	2	F	39	38	30	35.7	46	50	48	48.0	15	12	22	16.3
F	2	M	34	49	36	39.7	58	32	49	46.3	8	19	15	14.0
F	2	F	41	28	27	32.0	41	49	51	47.0	18	23	22	21.0
M	1	M	24	24	23	23.7	49	52	54	51.7	27	24	23	24.7
M	1	F	23	33	15	23.7	52	40	59	50.3	25	27	26	26.0
F	1	M	22	27	32	27.0	53	41	44	46.0	25	32	24	27.0
F	1	F	30	30	27	29.0	41	42	48	43.7	29	28	25	27.3
M	2	M or F	41.0	39.0	32.5	37.5	41.0	49.0	45.5	45.2	18.0	12.0	22.0	17.3
F	2	M or F	37.5	38.5	31.5	35.8	49.5	40.5	50.5	46.8	13.0	21.0	18.5	17.5
M	1	M or F	23.5	28.5	19.0	23.7	50.5	46.0	56.5	51.0	26.0	25.5	24.5	25.3
F	1	M or F	26.0	28.5	29.5	28.0	47.0	41.5	46.0	44.8	27.0	30.0	24.5	27.2
M or F	2	M	38.5	44.5	35.5	39.5	47.0	40.0	46.0	44.3	14.5	15.5	18.5	16.2
M or F	2	F	40.0	33.0	28.5	33.8	43.5	49.5	49.5	47.5	16.5	17.5	22.0	18.7
M or F	1	M	23.0	25.5	27.5	25.3	51.0	46.5	49.5	49.0	26.0	28.0	23.5	25.8
M or F	1	F	26.5	31.5	21.0	26.3	46.5	41.0	53.5	47.0	27.0	27.5	25.5	26.7
M	1 or 2	M	33.5	32.0	29.0	31.5	42.5	50.0	48.8	47.1	24.0	18.0	22.5	21.5
M	1 or 2	F	31.0	35.5	22.5	29.7	49.0	45.0	53.5	49.2	20.0	19.5	24.0	21.2
F	1 or 2	M	28.0	38.0	34.0	33.3	55.5	36.5	46.5	46.2	16.5	25.5	19.5	20.5
F	1 or 2	F	35.5	29.0	27.0	30.5	41.0	45.5	49.5	45.3	23.5	25.5	23.5	24.2
M	1 or 2	M or F	32.2	33.8	25.8	30.6	45.7	47.5	51.3	48.1	22.0	18.8	23.2	21.3
F	1 or 2	M or F	31.8	33.5	30.5	31.9	48.3	41.0	48.0	45.8	20.0	25.5	21.5	22.3
M or F	1 or 2	M	30.8	35.0	31.5	32.4	49.0	43.3	47.6	46.6	20.2	21.8	21.0	21.0
M or F	1 or 2	F	33.2	32.2	24.8	30.1	45.0	45.3	51.2	47.2	21.8	22.5	23.8	22.7
M or F	2	M or F	39.2	38.8	32.0	36.7	45.3	44.8	48.0	46.0	15.5	16.5	20.2	17.4
M or F	1	M or F	24.8	28.5	24.2	25.8	48.8	44.0	51.2	48.0	26.5	27.8	24.5	26.3
M or F	1 or 2	M or F	32.0	33.6	28.1	31.2	47.0	44.3	49.5	46.9	21.0	22.2	22.4	21.9

Significant Differences	*p*
Playmates Older	
Ordinal position	$< .05$
Playmates Same Age	
Interaction—child's sex, sib's sex, spacing (7-24) vs. (25-48)	$< .05$

had been listed was liked the best. This choice we have labelled the "preferred playmate." The playmates a young city child has probably do not represent his basic choice to the same degree as do his verbally expressed preferences. The associates named reflect in a measure what the very immediate neighborhood affords the child in the way of companions; the best friend and preferred playmate, in contrast, probably are influenced more by the child's values, identifications and aspirations.

The children tended to mention as playmates, as best friend, and best-liked playmate youngsters of their own age (i.e., differing by less than one year) more frequently than youngsters who were older or younger than they (Tables 8-10). The ages of the playmates named were determined from the school record when possible, the report of an older sib, or were inferred, when no other data were available, from what the child told us about the playmate. If he reported, for instance, the playmate was in the fourth grade in some school, we knew he was older; if the playmate was described as not yet able to talk, we knew he was younger than the child. Depending on the group, about 32 to 59 per cent of the alleged playmates were, as far as we could determine this, of the child's age; 15 to 49 per cent, older; and 12 to 32 per cent younger. It is noteworthy that more of the playmates, best friends, and preferred playmates listed by the child were older than were younger than he. This may reflect a tendency toward upward striving on the part of the children, or, in part at least, that more of these older children were available. Since the older sibling might well have more playmates than the younger, the incidence of the playmates listed who exceeded the child in years and the frequency with which the child specified as best friend someone who was older is a function, in part, of the ordinal position (Tables 8-9). As was expected, the proportion of those with an older sib who mentioned playmates with more years than they was greater than in the case of first-borns. The ordinal-position group difference was greatest at the under-two-year spacing (Table 8), being insignificant at the spacing beyond. When the sib was of lesser age, the percentage of alleged younger playmates was, as anticipated, higher than when the sib was of a greater age but this difference was not quite large enough to be significant (Table 8).

The preference of the second-born for the older associate is shown most clearly in the case of the best friend and preferred playmate data, at the close spacing, just as in the case of the listed playmates (Tables 7-10). As the sib-age disparity increased, the percentage of the best friends of second-borns who were older decreased and the percentage of best friends who were younger increased (Table 9). The trends in the case of preferred playmate are similar but group differences are not of sufficient magnitude to be significant (Table 10). The incidence of preferred playmates of the same age increased with spacing for second-borns. In other words, the wider the spacing, the less influence the older sib seems to have in determining whom the child views with most favor. Apparently, the older sib, if

TABLE 9

PERCENTAGE OF THE CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS WHO NAMED AS "BEST FRIEND" A CHILD WHO WAS OLDER, ABOUT THE SAME AGE, OR YOUNGER THAN THEY

DESCRIPTION OF GROUP			RELATIVE AGE OF "BEST FRIEND"											
Subject		Sibling	Older (per cent)				Same Age (per cent)				Younger (per cent)			
			AGE DIFFERENCE IN MONTHS BETWEEN SUBJECT AND SIBLING											
Sex	*Ordinal Position*	*Sex*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*
M	2	M	50	47	27	41.3	50	33	66	49.7	0	20	7	9.0
M	2	F	53	40	20	37.7	40	53	47	46.6	7	7	33	15.7
F	2	M	33	60	47	46.7	60	33	26	39.6	7	7	27	13.7
F	2	F	60	20	47	42.3	40	53	40	44.4	0	27	13	13.3
M	1	M	36	40	40	38.7	50	47	55	50.6	14	13	7	11.3
M	1	F	13	43	27	27.7	80	43	33	52.0	7	14	40	20.3
F	1	M	33	27	13	24.3	47	66	54	55.7	20	7	33	20.0
F	1	F	7	53	33	31.0	50	40	54	48.0	43	7	13	21.0
M	2	M or F	51.5	43.5	23.5	39.5	45.0	43	56.5	48.1	3.5	13.5	20.0	12.3
F	2	M or F	46.5	40.0	47.0	44.5	50.0	43	33.0	42.0	3.5	17.0	20.0	13.5
M	1	M or F	24.5	41.5	33.5	33.4	65.0	45	44.0	51.3	10.5	13.5	23.5	15.8
F	1	M or F	20.0	40.0	23.0	27.7	48.5	53	54.0	51.8	31.5	7.0	23.0	20.5
M or F	2	M	41.5	53.5	37.0	44.0	55.0	33.0	46.0	44.7	3.5	13.5	17.0	11.3
M or F	2	F	56.5	30.0	33.5	40.0	40.0	53.0	43.5	45.5	3.5	17.0	23.0	14.5
M or F	1	M	34.5	33.5	26.5	31.5	48.5	56.5	54.5	53.2	17.0	10.0	20.0	15.7
M or F	1	F	10.0	48.0	30.0	29.3	65.0	41.5	43.5	50.0	25.0	10.5	26.5	20.7
M	1 or 2	M	43.0	43.5	33.5	40.0	50	40.0	60.5	50.2	7.0	16.5	7.0	10.2
M	1 or 2	F	33.0	41.5	23.5	32.7	60	48.0	40.0	49.3	7.0	10.5	36.5	18.0
F	1 or 2	M	33.0	43.5	30.0	35.5	53.5	49.5	40.0	47.7	13.5	7.0	30.0	16.8
F	1 or 2	F	33.5	36.5	40.0	36.7	45.0	46.5	47.0	46.2	21.5	17.0	13.0	17.2
M	1 or 2	M or F	38.0	42.5	28.5	36.3	55.0	44.0	50.3	49.7	7.0	13.5	21.8	14.1
F	1 or 2	M or F	33.2	40.0	35.0	36.1	49.3	48.0	43.5	46.9	17.5	12.0	21.5	17.0
M or F	1 or 2	M	38.0	43.5	31.8	37.8	51.7	44.7	50.3	48.9	10.2	11.8	18.5	13.5
M or F	1 or 2	F	33.2	39.0	31.8	34.7	52.5	47.2	43.5	47.7	14.2	13.8	24.8	17.6
M or F	2	M or F	49.0	41.8	35.2	42.0	47.5	43.0	44.8	45.1	3.5	15.2	20.0	12.9
M or F	1	M or F	22.2	40.8	28.2	30.4	56.5	49.0	49.0	51.5	21.0	10.2	23.2	18.1
M or F	1 or 2	M or F	35.6	41.3	31.7	36.2	52.1	46.0	46.9	43.3	12.2	12.7	21.7	15.5

Significant Differences	*p*
Best Friend Older	
Ordinal position	$< .05$
Interaction—ordinal position, spacing (7-24) vs. (25-48)	$< .05$
Interaction—sib's sex, ordinal position, spacing (7-24) vs. (25-48)	$< .01$
Best Friend Same Age	
Interaction—sib's sex, ordinal position, spacing (7-24) vs. (25-48)	$\cong .01$
Interaction—child's sex, ordinal position, spacing (7-24) vs. (49-72)	$< .05$
Best Friend Younger	
Spacing (7-24) vs. (49-72)	$\cong .05$
Interaction—ordinal position, spacing (7-24) vs. (25-48)	$< .01$
Interaction—child's sex, sib's sex, spacing (7-24) vs. (25-48)	$< .01$
Interaction—child's sex, sib's sex, spacing (7-24) vs. (49-72)	$< .01$
Interaction—child's sex, sib's sex, ordinal position, spacing (7-24) vs. (25-48)	$< .05$

near in age, has more influence than the younger in building in the child a preference for, or creating opportunities for associating with, playmates who differ in the same direction in age as the sib. As has been said, the finding is probably in part a function of the general upward striving of children but, in addition, the hypothesis seems cogent that because the preschool child does not play so much out of the home as the school-age child does, the children brought in for play at home, or who live in the immediate neighborhood of the home, are to a considerable degree those the older sib contacts. The playmates may also be those who are at least old enough so that their parents are willing to let them visit the neighbors and be briefly out of sight.

The fact that the second-borns more frequently had older associates and hence had to struggle to keep up may account for our finding that second-borns did better than first-borns on the Thurstone Primary Abilities Test (4). The fact of the former's being more frequently outclassed may also be related to the fact they were rated less self-confident, competitive, and insistent on their rights (6). If the spacing is wide, the association with the sib's friends tends to be low, whether the sib is older or younger (Table 5).

In the case of first-borns the middle-spacing level showed a higher frequency of best friends older than the child, and a lower frequency of best friends younger, or of the same age (Table 9). This is the spacing at which other data we have suggest the first-born is particularly conflictful (6). His more frequent selection of an older child as best friend than is the case with children who have a sib very near in age, we think, may be a sign of status-striving as well as the relaxing of the influence of the sib, and a reaching of the child out of the home for companionship. The more-than-two-years younger sib and his associates are no doubt not very stimulating. The more frequent choice of an older best friend may also reflect to some extent the interests and values built up when the child was an only and associated chiefly with adults. If the latter were a very potent force, we should expect the preference for older child associates would be greatest among first-borns at the widest spacing. This is not the case (Table 9). A trend similar to the former, though not so marked, is shown among the data concerned with the preferred playmate (Table 10). It is suggestive that the group at the middle spacing, who, we think, are turning away from the sib and striving for a place with children outside of the home, were rated by their teachers as notably friendly to peers (6).

It is of interest that at the wide spacing those from opposite-sex sibling pairs tended to name more frequently as best friend a child who was younger than did those from same-sex pairs and less frequently some one their own age (Table 9). How seriously this finding should be taken is a question, since the various indexes of association do not point consistently in the same direction. It is possible, however, a second-born whose sib is of his own sex may, even though the age gap is wide, still try to keep up

TABLE 10

PERCENTAGE OF THE CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS WHOSE PREFERRED PLAYMATE WAS YOUNGER, ABOUT THE SAME AGE, OR OLDER THAN THEY

DESCRIPTION OF GROUP			RELATIVE AGE OF PREFERRED PLAYMATE											
Subject		Sibling	Older (per cent)				Same Age (per cent)				Younger (per cent)			
			AGE DIFFERENCE IN MONTHS BETWEEN SUBJECT AND SIBLING											
Sex	*Ordinal Position*	*Sex*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*
M	2	M	50	33	33	38.7	43	67	67	59.0	7	0	0	2.3
M	2	F	54	23	40	39.0	38	62	40	46.7	8	15	20	14.3
F	2	M	33	40	43	38.7	60	47	50	52.3	7	13	7	9.0
F	2	F	60	13	27	33.3	27	60	46	44.4	13	27	27	22.3
M	1	M	29	40	36	35.0	57	40	43	46.7	14	20	21	18.3
M	1	F	27	43	13	27.7	60	36	54	50.0	13	21	33	22.3
F	1	M	27	20	54	33.7	60	67	31	52.7	13	13	15	13.7
F	1	F	27	43	47	39.0	46	43	26	38.3	27	14	27	22.7
M	2	M or F	52.0	28.0	36.5	38.8	40.5	64.5	53.5	52.8	7.5	7.5	10.0	8.3
F	2	M or F	46.5	26.5	35.0	36.0	43.5	53.5	48.0	48.3	10.0	20.0	17.0	15.7
M	1	M or F	28.0	41.5	24.5	31.3	58.5	38.0	48.5	48.3	13.5	20.5	27.0	20.3
F	1	M or F	27.0	31.5	50.5	36.3	53.0	55.0	28.5	45.5	20.0	13.5	21.0	18.2
M or F	2	M	41.5	36.5	38.0	38.7	51.5	57.0	58.5	55.7	7.0	6.5	3.5	5.7
M or F	2	F	57.0	18.0	33.5	36.2	32.5	61.0	43.0	45.5	10.5	21.0	23.5	18.3
M or F	1	M	28.0	30.0	45.0	34.3	58.5	53.5	37.0	49.7	13.5	16.5	18.0	16.0
M or F	1	F	27.0	43.0	30.0	33.3	53.0	39.5	40.0	44.2	20.0	17.5	30.0	22.5
M	1 or 2	M	39.5	36.5	34.5	36.8	50.0	53.5	55.0	52.8	10.5	10.0	10.5	10.3
M	1 or 2	F	40.5	33.0	26.5	33.3	49.0	49.0	47.0	48.2	10.5	18.0	26.5	18.3
F	1 or 2	M	30.0	30.0	48.5	36.2	60.0	57.0	40.5	52.5	10.0	13.0	11.0	11.3
F	1 or 2	F	43.5	28.0	37.0	36.2	36.5	51.5	36.0	41.3	20.0	20.5	27.0	22.5
M	1 or 2	M or F	40.0	34.8	30.5	35.1	49.5	51.2	51.0	50.6	10.5	14.0	18.5	14.3
F	1 or 2	M or F	36.8	29.0	42.8	36.2	48.2	54.2	38.2	46.9	15.0	16.8	19.0	16.9
M or F	1 or 2	M	34.8	33.2	41.5	36.5	55.0	55.2	47.8	52.7	10.2	11.5	10.8	10.8
M or F	1 or 2	F	42.0	30.5	31.8	34.8	42.7	50.2	41.5	44.8	15.2	19.2	26.8	20.4
M or F	2	M or F	49.2	27.2	35.8	37.4	42.0	59.0	50.8	50.6	8.8	13.8	13.5	12.0
M or F	1	M or F	27.5	36.5	37.5	33.8	55.7	46.5	38.5	46.9	16.8	17.0	24.0	19.3
M or F	1 or 2	M or F	38.4	31.8	36.6	35.6	48.8	52.8	44.6	48.7	12.8	15.4	18.8	15.7

Significant Differences	*p*
Preferred Playmate Older	
Interaction—ordinal position, spacing (7-24) vs. (25-48)	$< .05$
Interaction—sib's sex, ordinal position, spacing (7-24) vs. (25-48)	$\cong .05$
Preferred Playmate Same Age	
Interaction—ordinal position, spacing (7-24) vs. (25-48)	$< .05$
Interaction—ordinal position, spacing (7-24) vs. (49-72)	$< .05$
Preferred Playmate Younger	
Sib's sex	$< .05$

with the sib and its associates. This identification with the older group may cause the M2M's and F2F's to be somewhat scornful of younger children and thus less willing to have as a best friend some one who is younger than is the case among those second-borns from opposite-sex pairs. In the latter case the members of sib pairs have low identification and sib contact because of both sex and age distance. The best friend chosen by the latter may represent, in contrast to the list of playmates given, choice less influenced by the arrangements the sib effects. Also we have noted those who have a much older sib opposite in sex tended to be somewhat withdrawn and dependent (5, 6). It is our opinion that they were protected and babied more than the second-borns from the same sex sibling pairs and hence probably were more inclined to select as best friend a younger child—i.e., one who was less dominant relative to them, as well as one more likely to be found around the home (hence probably a preschooler). The situation in the case of first-borns at the wide spacing, it seems reasonable to suspect, is somewhat different from that obtaining for the second-borns. In the former case, since the sib is virtually an infant, it can have very little direct effect. These first-born children have long been only children, and those in opposite-sex pairs, evidence we have leads us to believe, are more jealous and uncertain of their status than those from identical-sex pairs (6). With a greater frequency they expressed a desire to change places with the sib, for instance, when questioned in the interview (data not yet published). One might, accordingly, expect them to cling, to hang around home more, and possibly even select as best friend some one who was more in the image of the sib, or at least not difficult to deal with.

It is noteworthy that when preferred playmates are considered, in contrast to the best friends, which represent a less realistic preference as well as a less dependable index, those subjects with a sister showed a higher incidence of choice of playmates who were younger (Table 10). Possibly those with a sister had become inured because of the lesser aggressiveness of the female sib to a milder type of companion, a consideration that might give the younger child somewhat greater appeal as a playmate than the somewhat older.

A summary of the findings relative to playmate age follows: (1) The playmates mentioned, the preferred playmate and the best friend were most frequently of about the child's own age but were with a higher incidence older than younger, relative to the child. (2) The first-borns somewhat more frequently named as playmates, as preferred playmate, or as best friend, children with fewer years than themselves than did the second-borns. (3) The incidence of listed playmates, of preferred playmates, or of best friends who were older was significantly greater among second-borns than among first- only at the closest spacing. The incidence of older best friends and of older preferred playmates decreased among second-borns as the sib-age disparity expanded from under-two to two-to-

TABLE 11

PERCENTAGE OF THE CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS WHO PREFERRED TO PLAY WITH BOYS, WERE INDIFFERENT TO SEX OF PLAYMATES, OR WHO PREFERRED TO PLAY WITH GIRLS

DESCRIPTION OF GROUP			PREFERENCE AS TO SEX OF PLAYMATES											
Subject		Sibling	Male (%)				Female (%)				No Preference (%)			
			AGE DIFFERENCE IN MONTHS BETWEEN SUBJECT AND SIBLING											
Sex	*Ordinal Position*	*Sex*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*
M	2	M	60	73	60	64.3	13	7	13	11.0	27	20	27	24.7
M	2	F	33	80	67	60.0	40	7	20	22.3	27	13	13	17.7
F	2	M	7	13	7	9.0	53	60	66	59.7	40	27	27	31.3
F	2	F	13	7	0	6.7	47	93	80	73.3	40	0	20	20.0
M	1	M	53	87	73	71.0	0	0	20	6.7	47	13	7	22.3
M	1	F	33	33	53	39.7	14	14	20	16.0	53	53	27	44.3
F	1	M	7	33	20	20.0	46	54	53	51.0	47	13	27	29.0
F	1	F	0	0	13	4.3	60	67	67	64.7	40	33	20	31.0
M	2	M or F	46.5	76.5	63.5	62.2	26.5	7.0	16.5	16.7	27.0	16.5	20.0	21.2
F	2	M or F	10.0	10.0	3.5	7.8	50.0	76.5	73.0	66.5	40.0	13.5	23.5	25.7
M	1	M or F	43.0	60.0	63.0	55.3	7.0	7.0	20.0	11.3	50.0	33.0	17.0	33.3
F	1	M or F	3.5	16.5	16.5	12.2	53.0	60.5	60.0	57.8	43.5	23.0	23.5	30.0
M or F	2	M	33.5	43.0	33.5	36.7	33.0	33.5	39.5	35.3	33.5	23.5	27.0	28.0
M or F	2	F	23.0	43.5	33.5	33.3	43.5	50.0	50.0	47.8	33.5	6.5	16.5	18.8
M or F	1	M	30.0	60.0	46.5	45.5	23.0	27.0	36.5	28.8	47.0	13.0	17.0	25.7
M or F	1	F	16.5	16.5	33.0	22.0	37.0	40.5	43.5	40.3	46.5	43.0	23.5	37.7
M	1 or 2	M	56.5	80.0	66.5	67.7	6.5	3.5	16.5	8.8	37.0	16.5	17.0	23.5
M	1 or 2	F	33.0	56.5	60.0	49.8	27.0	10.5	20.0	19.2	40.0	33.0	20.0	31.0
F	1 or 2	M	7.0	23.0	13.5	14.5	49.0	57.0	59.5	55.2	43.5	20.0	27.0	30.2
F	1 or 2	F	6.5	3.5	6.5	5.5	53.5	80.0	73.5	69.0	40.0	16.5	20.0	25.5
M	1 or 2	M or F	44.8	68.2	63.2	58.7	16.7	7.0	18.2	13.8	38.5	24.8	18.5	27.3
F	1 or 2	M or F	6.8	13.2	10.0	10.0	51.5	68.5	66.5	62.2	41.8	18.2	23.5	27.8
M or F	1 or 2	M	31.8	51.5	40.0	41.1	28.0	30.2	38.0	32.1	40.2	18.2	22.0	26.8
M or F	1 or 2	F	19.8	30.0	33.2	27.7	40.2	45.2	46.8	44.0	40.0	24.8	20.0	28.3
M or F	2	M or F	28.2	43.2	33.5	35.0	38.2	41.8	44.8	41.6	33.5	15.0	21.8	23.4
M or F	1	M or F	23.2	38.2	39.8	33.7	30.0	33.8	40.0	34.6	46.8	28.0	20.2	31.7
M or F	1 or 2	M or F	25.7	40.7	36.6	34.3	34.1	37.8	42.4	38.1	40.2	21.5	21.0	27.6

Significant Differences	*p*
Male Preference	
Child's sex	$< .01$
Sib's sex	$< .01$
Spacing (7-24) vs. (25-48)	$< .05$
Interaction—sib's sex, ordinal position	$< .05$
Female Preference	
Child's sex	$< .01$
Interaction—child's sex, spacing (7-24) vs. (25-48)	$< .05$
No Preference	
Spacing (7-24) vs. (25-48)	$< .01$
Spacing (7-24) vs. (49-72)	$< .01$
Interaction—sib's sex, ordinal position, spacing (7-24) vs. (25-48)	$\cong .05$

four years, while the percentage of best friends and of preferred playmates of first-borns who were older than the child increased from the close to the middle sib-age-difference level. (5) Second-borns at the spacings greater than two years mentioned as the playmate liked best a child their own age more frequently than did first-borns, whereas at the close spacing the relation was reversed. (6) Those with a female sib named in greater numbers as preferred playmate a child who was younger than did those with a male sib. (7) At the over-four-year sib-age-difference level those from opposite-sex pairs tended to specify more frequently as best friend a child who was younger than did those from same-sex pairs.

Sex Preference in Playmates

Our subjects generally preferred, and had, playmates of their own sex. This trend was revealed in the case of the children listed as playmates, those named as best friend and as the playmate liked the best, as well as in the case of the stated sex preference (Tables 11-14). Thirty-three to 93 per cent of the children, depending on the group, when asked, "Would you rather play with boys, or with girls, or doesn't it make any difference?," expressed a preference for associates of their own sex (Table 11). The finding is congruent with the sex distance finding which we reported in Reference (3). When the children were asked why they had their particular preference, the reasons usually given were liking for some of the favorite amusements or games of the same sex, though often prejudice against such traits as roughness, disobedience, and unwillingness to share (all attributed more frequently to boys) were mentioned. Occasionally the children were unable to offer any justification for their choice, asserting merely that they preferred a given sex just because they did, or that one sex was nicer than the other. Boys more frequently than girls mentioned sex, the negative traits, and play interests as the bases for choice. Girls more frequently mentioned positive personal qualities and service. Very seldom (three cases) was the response indicating direct social pressure, such as "My mamma wants me to" noted. It appears, then, that even by five years greater congeniality exists between the members of a given sex than between those not similar in sex. How much of this is culturally determined and how much is due to differences rooted in the genes is a question. We have the suspicion that in the first stage, when the individual is embracing a social role or identification, he tends to exclude or reject that which is in contrast. To play well the girl's role, for instance, the girl may feel she must reject boys and whatever is masculine. Later, when sex identification is well established and/or society exerts pressure to bring the sexes together, the tendency to reject will doubtless be reduced. How much rejection occurs, it seems reasonable to assume, may be dependent on how much opportunity there is for free association with the opposite sex, especially under conditions when that sex receives approval. We do not mean to

TABLE 12

PERCENTAGE OF MALES AND OF FEMALES AMONG ALL THOSE NAMED AS PLAYMATES BY THE CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS

DESCRIPTION OF GROUP			SEX OF PLAYMATES NAMED							
Subject		Sibling	Male (per cent)				Female (per cent)			
			AGE DIFFERENCE BETWEEN SUBJECT AND SIBLING IN MONTHS							
Sex	*Ordinal Position*	*Sex*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*
M	2	M	73	81	78	77.3	27	19	22	22.7
M	2	F	77	62	77	72.0	23	38	23	28.0
F	2	M	34	35	31	33.3	66	65	69	66.7
F	2	F	38	25	31	31.3	63	75	69	69.0
M	1	M	79	77	79	78.3	21	23	21	21.7
M	1	F	53	68	74	65.0	47	32	26	35.0
F	1	M	42	53	34	43.0	58	47	66	57.0
F	1	F	24	31	26	27.0	76	69	74	73.0
M	2	M or F	75.0	71.5	77.5	74.7	25.0	28.5	22.5	25.3
F	2	M or F	36.0	30.0	31.0	32.3	64.5	70.0	69.0	67.8
M	1	M or F	66.0	72.5	76.5	71.7	34.0	27.5	23.5	28.3
F	1	M or F	33.0	42.0	30.0	35.0	67.0	58.0	70.0	65.0
M or F	2	M	53.5	58.0	54.5	55.3	46.5	42.0	45.5	44.7
M or F	2	F	57.5	43.5	54.0	51.7	43.0	56.5	46.0	48.5
M or F	1	M	60.5	65.0	56.5	60.7	39.5	35.0	43.5	39.3
M or F	1	F	38.5	49.5	50.0	46.0	61.5	50.5	50.0	54.0
M	1 or 2	M	76.0	79.0	78.5	77.8	24.0	21.0	21.5	22.2
M	1 or 2	F	65.0	65.0	75.5	68.5	35.0	35.0	24.5	31.5
F	1 or 2	M	38.0	44.0	32.5	38.2	62.0	56.0	67.5	61.8
F	1 or 2	F	31.0	28.0	28.5	29.2	69.5	72.0	71.5	71.0
M	1 or 2	M or F	70.5	72.0	77.0	73.2	29.5	28.0	23.0	26.8
F	1 or 2	M or F	34.5	36.0	30.5	33.7	65.8	64.0	69.5	66.4
M or F	1 or 2	M	57.0	61.5	55.5	58.0	43.0	38.5	44.5	42.0
M or F	1 or 2	F	48.0	46.5	52.0	48.8	52.2	53.5	48.0	51.2
M or F	2	M or F	55.5	50.8	54.2	53.5	44.8	49.2	45.8	46.6
M or F	1	M or F	49.5	57.2	53.2	53.3	50.5	42.8	46.8	46.7
M or F	1 or 2	M or F	52.5	54.0	53.7	53.4	47.6	46.0	46.3	46.6

Significant Differences	*p*
Per Cent of Playmates Who Were Male	
Child's sex	$< .01$
Per Cent of Playmates Who Were Female	
Child's sex	$< .01$

imply, however, that we should expect conflict to be completely dissipated. Congruent with the previous point is the fact that children who had a sib of the opposite sex and near in age tended with a higher incidence to express a preference for playmates opposite in sex to themselves and more often named such as best friend, than did children from same-sex pairs (Tables 11, 13). The incidence of preference for male playmates, then, tended to be greater in the groups where the sib was male than when the sib was female, and, conversely, though the difference, while consistent, was not quite great enough to meet the statistical criterion of significance, the frequency of preference for female playmates was greater in mixed-sex pairs than in same-sex (Table 11). (*See also* Reference 7.) The difference between first-born boys with a sister and first-born boys with a brother was marked, as was also the difference between second-born girls with a brother, as compared with second-born girls with a sister (*see also* Reference 7).

It is noteworthy, relevant to the sex identification question, that the expressed preference for playmates of their own sex (not the number of associates or even preferred playmates) was more frequent among those children whose sib differed over two years in age than for those whose sib differed by under two years (Table 11). (*See also* Reference 7.) A parallel trend was observed in the case of best friend (Table 13). There was a marked drop in frequency of reported indifference as to sex of playmate from the close to the middle spacing (Table 11), a finding not out of line with those in Reference 7. The association with the sib and his associates, as was shown earlier, is greater when the latter is near in age (Table 5) and much of the association occurs on home territory. This may temper inter-sex rivalry. When the child, on the other hand, because of a large age disparity between himself and his sib, must seek, or wishes companions of his own—i.e., must choose them—his inclination seems to be for associates of his own sex type.

It is of possible significance in connection with the question of cultural or social pressures that boys tended to have proportionally more boy companions than girls had girls (Table 12). Pointing in the same direction is the fact that the girl's best friend was less frequently female than the boy's best friend was male (Table 13), a finding quite in line with Rabban's result and our results presented in (7). A variety of possible interpretations occur to us. It may be the boy's play is more varied and interesting. It is not impossible that the girl has sensed the favored status which the society in which she lives gives to the male and more frequently tries to associate with him than he does with her. This seems not very likely, as the girl's expressed preference is quite as strong for her sex as the boy's expressed preference is for his. Possibly, parents seek male companions for their sons more frequently than female companions for their daughters. There is evidence that it is more serious in our culture for the boy to deviate from the male type than for the young girl to deviate from the female type.

TABLE 13

PERCENTAGE OF MALES AND OF FEMALES AMONG THOSE NAMED AS "BEST FRIEND" BY THE CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS

DESCRIPTION OF GROUP			SEX OF "BEST FRIEND"							
Subject		Sibling	Male (per cent)				Female (per cent)			
			AGE DIFFERENCE BETWEEN SUBJECT AND SIBLING IN MONTHS							
Sex	*Ordinal Position*	*Sex*	*7-24*	*25-48*	*49-72*	*Total*	*7-24*	*25-48*	*49-72*	*Total*
M	2	M	80	93	93	88.7	20	7	7	11.3
M	2	F	60	73	80	71.0	40	27	20	29.0
F	2	M	27	40	40	35.7	73	60	60	64.3
F	2	F	40	27	13	26.7	60	73	87	73.3
M	1	M	100	93	67	86.7	0	7	33	13.3
M	1	F	73	71	73	72.3	27	29	27	27.7
F	1	M	33	13	47	31.0	67	87	53	69.0
F	1	F	21	40	33	31.3	78	60	67	68.3
M	2	M or F	70.0	83.0	86.5	79.8	30.0	17.0	13.5	20.2
F	2	M or F	33.5	33.5	26.5	31.2	66.5	66.5	73.5	68.8
M	1	M or F	86.5	82.0	70.0	79.5	13.5	18.0	30.0	20.5
F	1	M or F	27.0	26.5	40.0	31.2	72.5	73.5	60.0	68.7
M or F	2	M	53.5	66.5	66.5	62.2	46.5	33.5	33.5	37.8
M or F	2	F	50.0	50.0	46.5	48.8	50.0	50.0	53.5	51.2
M or F	1	M	66.5	53.0	57.0	58.8	33.5	47.0	43.0	41.2
M or F	1	F	47.0	55.5	53.0	51.8	52.5	44.5	47.0	48.0
M	1 or 2	M	90.0	93.0	80.0	87.7	10.0	7.0	20.0	12.3
M	1 or 2	F	66.5	72.0	76.5	71.7	33.5	28.0	23.5	28.3
F	1 or 2	M	30.0	26.5	43.5	33.3	70.0	73.5	56.5	66.7
F	1 or 2	F	30.5	33.5	23.0	29.0	69.0	66.5	77.0	70.8
M	1 or 2	M or F	78.2	82.5	78.2	79.6	21.8	17.5	21.8	20.4
F	1 or 2	M or F	30.2	30.0	33.2	31.1	69.5	70.0	66.8	68.8
M or F	1 or 2	M	60.0	59.8	61.8	60.5	40.0	40.2	38.2	39.5
M or F	1 or 2	F	48.5	52.8	49.8	50.4	51.2	47.2	50.2	49.5
M or F	2	M or F	51.8	58.2	56.5	55.5	48.2	41.8	43.5	44.5
M or F	1	M or F	56.8	54.3	55.0	55.4	43.0	45.8	45.0	44.6
M or F	1 or 2	M or F	54.3	56.2	55.8	55.4	45.6	43.8	44.2	44.5

Significant Differences	*p*
Best Friend Male	
Child's sex	$< .01$
Sib's sex	$< .05$
Interaction—child's sex, ordinal position, spacing (7-24) vs. (49-72)	$< .05$
Best Friend Female	
Child's sex	$< .01$
Sib's sex	$< .05$
Interaction—child's sex, ordinal position, spacing (7-24) vs. (49-72)	$< .05$

In other words, a sissy is more frowned upon than is a tomboy (*see* Reference 7). Since a "man is known by the company he keeps," it will be viewed by the culture as important that the boy's companions be predominantly male. It also seems not impossible that the above fact, or more frequent association of girls with boys than vice versa, merely reflects the former's greater exposure to boys than boys to girls. Mothers may be willing to let the latter play at friend's homes more frequently, perhaps, than they are to permit this for their daughters—an early indication of the culture's tendency to give boys more freedom to go about. However, since data we have indicate that girls of five and six have more friends than boys and are socially more mature, it may be it is the girls who are circulating the more socially. It is worth pointing out in this connection a finding, the data supporting which we have not yet published—namely, that the first-born boys affirmed that they played much with their sisters with a higher incidence than the girls asserted that their association with their brothers was very frequent. This, of course, as has been mentioned, may merely reflect a difference in the standards of the two sexes, or that the girls are less rejecting of things masculine than boys are of things feminine (*see* References 12 and 7).

Bearing on the issue of the sex identification problem of the two sexes is the observation that at the middle and wide spacing those first-borns with a female sib alleged more frequently they were indifferent as to sex of playmate than did those with a male (*see also* 7), while among second-borns the trend was reversed (Table 11). The preschool and very young male, we have a hunch, is particularly in conflict relative to his sex, partly because he operates in the home environment, which tends to be female dominated. Rabban's finding of greater awareness of their sex role in preschool boys than girls (12) may also be a reflection of the mechanism suggested. The girl's conflict, on the other hand, we suspect, increases as she expands her contacts outside of the home—i.e., with the environment in which the male tends to receive more favor. The second-borns, then, one would expect to be exposed to more rivalry along sex lines (because of the girl's own stress) if the sib is female than if male, whereas in the case of the first-borns, the situation should be reversed. It should be noted, apropos of this, that, when the sib is male, first-borns show more frequently a male preference than second-borns, whereas, when the sib is female, the frequency of preference for males is, if anything, less in the case of the former than the latter and, also, indifference is slightly greater (Table 11). It is well to remind the reader at this point that the sex distribution of the playmates actually associated with does not follow exactly the sex preference pattern just described.

Following is a summary of the findings relative to the sex of the associates of our subjects, as well as to their sex preference in the matter of playmates. (1) The children listed as playmates, as preferred playmate, and as best friend were more frequently those of the child's own sex than

TABLE 14

PERCENTAGE OF MALES AND OF FEMALES AMONG THOSE NAMED AS PREFERRED PLAYMATE BY THE CHILDREN IN THE VARIOUS FAMILY CONSTELLATION GROUPS

DESCRIPTION OF GROUP			SEX OF PLAYMATE "LIKED BEST"							
Subject		Sibling	Male (per cent)				Female (per cent)			
			AGE DIFFERENCE BETWEEN SUBJECT AND SIBLING IN MONTHS							
Sex	Ordinal Position	Sex	7-24	25-48	49-72	Total	7-24	25-48	49-72	Total
M	2	M	67	80	87	78.0	33	20	13	22.0
M	2	F	67	63	80	70.0	33	37	20	30.0
F	2	M	07	40	27	24.7	93	60	73	75.3
F	2	F	20	13	27	20.0	80	87	73	80.0
M	1	M	86	87	73	82.0	14	13	27	18.0
M	1	F	60	63	80	67.7	40	37	20	32.3
F	1	M	27	40	21	29.3	73	60	79	70.7
F	1	F	20	27	13	20.0	80	73	87	80.0
M	2	M or F	67.0	71.5	83.5	74.0	33.0	28.5	16.5	26.0
F	2	M or F	13.5	26.5	27.0	22.3	86.5	73.5	73.0	77.7
M	1	M or F	73.0	75.0	76.5	74.8	27.0	25.0	23.5	25.2
F	1	M or F	23.5	33.5	17.0	24.7	76.5	66.5	83.0	75.3
M or F	2	M	37.0	60.0	57.0	51.3	63.0	40.0	43.0	48.7
M or F	2	F	43.5	38.0	53.5	45.0	56.5	62.0	46.5	55.0
M or F	1	M	56.5	63.5	47.0	55.7	43.5	36.5	53.0	44.3
M or F	1	F	40.0	45.0	46.5	43.8	60.0	55.0	53.5	56.2
M	1 or 2	M	76.5	83.5	80.0	80.0	23.5	16.5	20.0	20.0
M	1 or 2	F	63.5	63.0	80.0	68.8	36.5	37.0	20.0	31.2
F	1 or 2	M	17.0	40.0	24.0	27.0	83.0	60.0	76.0	73.0
F	1 or 2	F	20.0	20.0	20.0	20.0	80.0	80.0	80.0	80.0
M	1 or 2	M or F	70.0	73.2	80.0	74.4	30.0	26.8	20.0	25.6
F	1 or 2	M or F	18.5	30.0	22.0	23.5	81.5	70.0	78.0	76.5
M or F	1 or 2	M	46.8	61.8	52.0	53.5	53.2	38.2	48.0	46.5
M or F	1 or 2	F	41.8	41.5	50.0	44.4	58.2	58.5	50.0	55.6
M or F	2	M or F	40.2	49.0	55.2	48.1	59.8	51.0	44.8	51.9
M or F	1	M or F	48.2	54.2	46.8	49.7	51.8	45.8	53.2	50.3
M or F	1 or 2	M or F	44.2	51.6	51.0	48.9	55.8	48.4	49.0	51.1

Significant Differences

	p
Preferred Playmate Male Child's sex	$< .01$
Preferred Playmate Female Child's sex	$< .01$

opposite in sex. The children also expressed verbally a preference for their own sex kind. (2) In those groups in which the child's sex was different from his sib's, the incidence of children holding a preference for playmates opposite in sex to themselves, or expressing indifference as to sex of playmates, was higher than in those groups in which the sib and child were identical in sex. The preference for male playmates, then, tended to be stronger when the sib was male than when it was female and vice versa. (3) Preference for playmates similar in sex tended to increase as the age difference between the the child and his sib increased. A similar trend was shown in the case of the variable, best friend. (4) Boys listed proportionally more male companions than girls did female ones, though no parallel trend was to be noted in the case of the variable, verbally expressed preference. (5) At the sib-age disparity levels of over two years the first-borns with a female sib alleged more often they were indifferent as to sex of playmate than did those with a male, while among second-borns the trend was reversed. (6) When the sib was male, the incidence of first-borns reporting a male preference was higher than the incidence of such a preference among second-borns; but, when the sib was female, the relative frequency of male preference for first- and second-borns was reversed.

For summaries of the findings of previous sections the reader is referred to pages 186 and 193. At this point let it merely be said that the study amply demonstates that characteristics of the sibling are related to the type of associates a child has as well as to the playmate preferences he develops.

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M or F	2	F	43.5	38.0	53.5	45.0	56.5	62.0	46.5	55.0
M or F	1	M	56.5	63.5	47.0	55.7	43.5	36.5	53.0	44.3
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M	1 or 2	F	63.5	63.0	80.0	68.8	36.5	37.0	20.0	31.2
F	1 or 2	M	17.0	40.0	24.0	27.0	83.0	60.0	76.0	73.0
F	1 or 2	F	20.0	20.0	20.0	20.0	80.0	80.0	80.0	80.0
M	1 or 2	M or F	70.0	73.2	80.0	74.4	30.0	26.8	20.0	25.6
F	1 or 2	M or F	18.5	30.0	22.0	23.5	81.5	70.0	78.0	76.5
M or F	1 or 2	M	46.8	61.8	52.0	53.5	53.2	38.2	48.0	46.5
M or F	1 or 2	F	41.8	41.5	50.0	44.4	58.2	58.5	50.0	55.6
M or F	2	M or F	40.2	49.0	55.2	48.1	59.8	51.0	44.8	51.9
M or F	1	M or F	48.2	54.2	46.8	49.7	51.8	45.8	53.2	50.3
M or F	1 or 2	M or F	44.2	51.6	51.0	48.9	55.8	48.4	49.0	51.1

Significant Differences	*p*
Preferred Playmate Male	
Child's sex	$< .01$
Preferred Playmate Female	
Child's sex	$< .01$

opposite in sex. The children also expressed verbally a preference for their own sex kind. (2) In those groups in which the child's sex was different from his sib's, the incidence of children holding a preference for playmates opposite in sex to themselves, or expressing indifference as to sex of playmates, was higher than in those groups in which the sib and child were identical in sex. The preference for male playmates, then, tended to be stronger when the sib was male than when it was female and vice versa. (3) Preference for playmates similar in sex tended to increase as the age difference between the the child and his sib increased. A similar trend was shown in the case of the variable, best friend. (4) Boys listed proportionally more male companions than girls did female ones, though no parallel trend was to be noted in the case of the variable, verbally expressed preference. (5) At the sib-age disparity levels of over two years the first-borns with a female sib alleged more often they were indifferent as to sex of playmate than did those with a male, while among second-borns the trend was reversed. (6) When the sib was male, the incidence of first-borns reporting a male preference was higher than the incidence of such a preference among second-borns; but, when the sib was female, the relative frequency of male preference for first- and second-borns was reversed.

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MASCULINITY-FEMININITY IN RELATION TO ANXIETY AND SOCIAL ACCEPTANCE

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The major importance of achieving the role appropriate to one's sex is continually stressed in writings upon the personality development and adjustment of boys and girls. These writings range all the way from Freud (5), who invoked the concept of identification to explain the development of sex-appropriate behavior, to such writers as Havighurst (7) who have seen this process as one of the major developmental tasks facing the maturing individual.

Although research literature on adjustment in the adult abounds in studies of masculinity-femininity, there has been very little examination of sex-appropriate behavior in childhood as related to adjustment. Because of the general significance of this concept, the writer has attempted to test the occurrence of certain relationships which might be hypothesized to exist between sex-appropriate behavior in children and indices of adjustment.

These hypotheses center around what has become a commonplace observation today, that this is an age of transition for women, a period in which the feminine role lacks clarity. There is considerable evidence for this belief. For example, Erikson (4) states that today's young woman finds it impossible to accept the feminine role model provided by her mother. Rabban (11) found that, at least in the middle class, little girls are slower to accept a feminine role than boys are a masculine one. Tryon (14), in her often quoted study, found that, while popularity in boys is associated with approximately the same traits at ages 12 and 15, in the case of girls there is a marked shift in these years from a pattern of ladylike submissive behavior at the earlier age toward a pattern characterized by daring, leadership, activity, and extraversion. Tuddenham (15), who used Tryon's method with the first five grades, found a regular shift in the traits most valued in girls, this shift being in the general direction of that found in a more marked form by Tryon. Helper (8), in a recent study, found that with a junior high school group social acceptance in boys appeared to be associated with following the role model provided by the father, while, in girls, following the mother's role was not so approved. All of these studies would seem to imply that as youngsters reach the upper elementary grades or beyond, masculinity in boys is more rewarded than

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femininity in girls. As Tuddenham (16) suggests, typical masculine traits seem to be increasingly approved with increasing age, while typical feminine traits of docility, neatness, quietness—so much valued in the early grades—become progressively less valued as the youngster approaches adolescence.

On the basis of such studies as those mentioned above, it seems reasonable to predict that sex-appropriate behavior in boys of the upper elementary grades would tend to be associated with a high level of social acceptance while the reverse might well be true of girls. It would also seem in keeping to predict a relationship between sex-appropriate behavior and the amount of anxiety manifested. Here we would expect that sex-appropriate behavior in boys would be associated with low anxiety, while in girls sex-appropriate behavior would tend to accompany a high level of anxiety. This second prediction would follow if rejection by one's peers is associated with anxiety. Thus, it seems logical to expect low anxiety to accompany sex-appropriate behavior in boys since this is a period in which Tuddenham (16) found the typical masculine traits to be highly valued. In girls we also have a period in which the more masculine traits are valued. It would thus seem likely that girls who hold on to the more feminine pattern in the face of a shift in peer evaluation of such femininity will have difficulties. It is possible also that we have here a circular effect. The docility, neatness, and quietness which characterize the feminine girl of Tuddenham's findings may at this age be expressions of anxiety or insecurity. Ullmann's (17) research would suggest that maladjustment in girls is related to such traits. In turn these somewhat dubious virtues lead to rejection by the peer group so that manifest anxiety might be expected to increase.

A problem which must be solved, however, before it is possible to examine such relationships, is that of developing some index of sex-appropriate behavior for use with children. Since pointed out so cogently by Margaret Mead (9), it has been clearly recognized that much of what we call masculine or feminine is culturally determined. On this basis we might argue that the determination of what is masculine or feminine rests with one's social group. Thus, we could contend that an adequate index of sex-appropriate behavior might be obtained by investigating the opinion of one's peers. It is such a line of reasoning which was followed in the present study. The subsequent section on procedure will describe the instrument which was developed.

With the use of this instrument and others to be described, two hypotheses were tested:

Hypothesis 1. In the upper elementary grades, where groups of high and low anxiety are compared as to sex-appropriate behavior, there will be an interaction effect between sex and anxiety. This will be in the direction of an association between low anxiety and high sex-appropriate behavior in boys. In girls the direction will be reversed, high anxiety being associated with high sex-appropriate behavior.

Hypothesis 2. In the upper elementary grades, where groups of high and low social acceptance are compared as to sex-appropriate behavior, there will be an interaction effect between sex and social acceptance. Boys high in social acceptance will tend to be high in sex-appropriate behavior while with girls those high in social acceptance will tend toward a low degree of sex-appropriate behavior.

PROCEDURE

The Masculinity-Femininity Scale

To obtain an index of sex-appropriate behavior, scales were devised separately for boys and girls along the order of that suggested by Cunningham (3) for a social distance scale and subsequently utilized in the Career Patterns Study (12) in another context. Each of these scales consisted of five points with descriptions for each point. For the girls, as an illustration, Scale Point 1 was:

> She is a regular "young lady." She is sweet and neat and dainty. She doesn't like boys' games and sports at all. She is just interested in home and clothes and girls' games and books.

Scale Point 5 for the girls was:

> She is a real tomboy. She wants to wear jeans all the time and likes boys' games and sports. She acts as if she wished she were a boy instead of a girl.

Scale Point 3 for each sex suggested "the usual type" of boy or girl, and the Scale Points 2 and 4 less extreme positions than 1 and 5.

The wording of these items and the descriptive characteristics, as "wears jeans," were developed largely from paragraphs written by a seventh grade class. These youngsters were asked to describe what it meant to call a girl very feminine or very unfeminine instead and to call a boy very masculine or very lacking in masculinity. A list of names of the children in a group to be rated was printed along side the rating scale and thus each child was rated by every other child in his group. As preliminary checking, in which the ratings by boys and girls were examined separately, indicated that the ratings made by the two sexes were highly similar, each child's score was based on a composite of all the children in his classroom. His score was the mean of the ratings assigned by his classmates. The lower score is every case implies the greater degree of sex-appropriate behavior as perceived by one's peers. The youngsters tended to use the upper end of the scale more heavily, as may be seen by the means for the two sexes. For the boys the mean was 2.54 with a standard deviation of .55; the girls' mean was 2.65 with a standard deviation of .67.

The test-retest reliability for this scale after an interval of six weeks was .94 for the girls in the subject group and .86 for the boys. Correlations were run between peer ratings and the composite ratings of the present teacher and the teacher of the year before for each of the groups. For the girls the correlation coefficient was .66; for the boys it was also .66. This would indicate that the children rate in a fashion not dissimilar to the adults in question.

The Manifest Anxiety Scale

The children's form of the manifest anxiety scale developed by Castenada, McCandless, and Palermo (2) was employed. This scale is basically an adaptation of the Taylor scale (13) for use with children in the upper elementary grades. Incorporated within it is a lie-scale. Where the anxiety scale was used in the analyses, the records of children with lie-scores of 5 or above were discarded. On the anxiety scale, where scores have a theoretical range of 0 to 42, the mean for the present group of boys was 13.9 with a standard deviation of 5.9. For girls the corresponding statistics were 15.4 and 7.5. These means tend to be somewhat smaller than those found by Castenada, who quotes means of 16.6 and 18.5 for boys and girls, respectively, at the sixth grade level.

The Index of Social Acceptance

The instrument used to assess social acceptance was the Who Are They test developed for use in the Community Youth Development Program (1). This variant of the Guess Who or reputation test consists of 15 items, three dealing with leadership, three with practical intelligence, four with withdrawal, and four with aggression; in addition there is an item in which the child is asked to list those he wishes for friends. Illustrations of items for the first four categories follow:

> Leadership: Who are the good leaders? They are leaders in several things.
> Practical Intelligence: Who are the boys and girls that make good plans?
> Aggression: Who are the ones that break rules—rules of the school and rules of games?
> Withdrawal: Who are the boys and girls that stay out of games?

Unlimited choice was given to the children in nominating their peers. Scores were obtained separately for each of the five categories. No separations were made of the nominations for each item by boys and girls as preliminary checking did not indicate that boys and girls tended to nominate differently on the items. It was true, however, that girls nominated a greater number of girls and boys a greater number of boys. The score for each child on any index consisted of the total number of mentions he received for a given category. Since there was a slightly smaller number of children in the sixth grade, their scores were multiplied by a constant to render them equivalent to the seventh grade scores. No direct attempt was made to check reliability of this scale. In a repeat, however, of this test after a lapse of eight months—virtually a school year—with the seventh grade group, rank difference correlations were obtained for each of the five categories separately by the sexes. With the single exception of the correlation for aggression in girls, which was .44, these correlations ranged from .65 to .86. With 14 cases for the boys and 17 for the girls, all of these correlations, except the one of .44 for aggression in girls, may be considered as significant at or beyond the 1 per cent level.

A word should probably be inserted here concerning the independence of the five possible scores on the Who Are They test. They are independent in the sense that there is no overlap in the items used to make up the several scores. Some of the intercorrelations, however, tended to be quite high. Rank-difference correlations between the various pairings of the positive acceptance indices, as calculated separately for the sexes, ranged from .53 to .87. Between the two negative indices, aggression and withdrawal, correlations were low, —.22 and .32 for boys and girls, respectively. The measures of positive acceptance, as would be expected, were negatively correlated with the negative acceptance measures, except in the case of aggression in girls, which showed low positive correlations with the three positive acceptance measures. With this exception the correlations ranged from —.20 to —.61. These correlations were based on the total sample of 34 boys and 27 girls. Despite the substantial nature of many of these correlations it was decided to make use of the five scores in the analyses to follow, chiefly for the purpose of having available more than one index of social acceptance and more than one of rejection. Because of their intercorrelations, however, they cannot be thought of as providing independent tests of the hypothesis concerning the relation between masculinity-femininity and sex-appropriate behavior. Such value as they have is largely one of giving some picture of the consistency of the hypothesized relation.

Subjects

Subjects were obtained from the sixth and seventh grades of a laboratory school which draws almost exclusively from a middle class population, chiefly an upper middle one. All children in the two grades were tested, a total of 34 boys and 27 girls. In the analyses of data approximately the top and bottom thirds of the group of boys and girls with respect to the characteristics being examined were used. With the exception of the analysis involving the children's manifest anxiety scale data, where certain scores were discarded because of a lie-score above the cutting point, there were 11 boys in each of the high groups and 11 in each of the low groups for study. There were nine girls in each of the high groups and the same number in the low groups.

The particular grades used in this study were chosen largely because, on the basis of Tryon's (14) and Tuddenham's (16) findings, these groups might be expected to show the interaction effect at a maximum. This is based partly upon the assumption that the present sample of girls, tested in 1955, might be expected to show the shift in social acceptance in relation to sex-appropriate behavior somewhat earlier than Tryon's sample of nearly two decades ago. Youngsters mature physically somewhat sooner today and there is at least a general belief that there is an accompanying amount of social acceleration.

The children were tested in their classrooms by their teachers, who had been familiarized with the instruments. The same order was followed in both groups and all tests were completed within a period of three days.

RESULTS

In the analyses which follow, the scores on the masculinity-femininity scale were employed as criterion scores, while the Who Are They and anxiety scores were used to constitute groups of high and low degree of the characteristic being examined. This was done because the masculinity-femininity scores tended to have a small variability and to be approximately normal in distribution as well as could be judged by graphic portrayals of the data. The Who Are They scores tended to be markedly skewed in the positive direction.

With the use of a 2 × 2 factorial design, analyses of variance were run for the anxiety scale and for each of the five categories of the Who Are They data. A summary of these analyses of variance is given in Table 1. The 5 per cent level of significance was used throughout, and where *t* tests were employed to test differences in means, one-tail tests were used since all predictions were directional in nature.

TABLE 1

SUMMARY OF THE ANALYSES OF VARIANCE

MAJOR VARIABLE	VARIANCE COMPONENTS FOR THE SEVERAL ANALYSES			
	Major Variable $df = 1$	*Sex* $df = 1$	*Interaction* $df = 1$	*Within* $df = 36$
Anxiety	2.007* ($F = 7.66$)	.213	.622	.262†
Leadership	.402	.841	3.017* ($F = 7.24$)	.406
Practical Intelligence	.091	.0001	1.437	.410
Friendship	2.411	.001	2.036* ($F = 6.09$)	.334
Aggression	1.018	.033	.976	.367
Withdrawal	.003	.003	4.063* ($F = 12.98$)	.313

* The ratio between each of these variance components and its appropriate error term is significant at or beyond the 5 per cent level.

† In the analysis of the anxiety data the number of degrees of freedom for the within variance component is 32 instead of 36.

In these analyses it should be pointed out that the nature of the masculinity-femininity scale would be expected to lead to extremely small mean squares when the main effect for sex is examined. This would be anticipated since each of these scales is scored for sex-appropriate behavior rather than for masculinity-femininity *per se*. In other words, it would be surprising to find that girls are more like girls than boys are like boys. The F ratios for sex, however, were examined by means of the F distribution table. The most startling of these mean squares, .0001, when inverted, yields an F of 4100. With 36 and 1 degrees of freedom, respectively, an F of that magnitude might be expected to occur by chance between 1 and 2.5 per cent of the time.

Where the analyses yielded significant F ratios, t tests were used to examine the differences in means of the groups. For each of the sets of data Hartley's test of homogeneity of variance (6) was employed. Where the variance was not homogeneous, the variance estimates for the subgroups were employed in the denominators of the t tests. The details of these analyses are given in the succeeding paragraphs. Table 2 gives the mean scores for the groups of high and low level for the several analyses. It should be remembered that the lower the score, the more sex-appropriate the perceived behavior.

The first major hypothesis states that there will be an interaction effect with respect to sex-appropriate behavior when groups are constituted by sex and level of anxiety. As may be seen by reference to Table 1, a significant F for interaction was not found. Instead there was a significant main effect for anxiety ($F = 7.66$). The critical value of F with 1 and 32 degrees of freedom is 4.16 for significance at the 5 per cent level. The direction of the relation is one of high anxiety's being associated with a high level of sex-appropriate behavior.

The second major hypothesis is that there will be an interaction effect between sex and social acceptance when sex-appropriate behavior is used as a criterion. To test this hypothesis, five separate scores from the Who Are They instrument were employed. Three of these, leadership, practical intelligence, and friendship choice, may be viewed as indications of social acceptance, while the other two, aggression and withdrawal, may be seen as indicating non-acceptance. As was pointed out in the initial discussion of this instrument, the five scores tend to be intercorrelated, and thus the five analyses which follow may not be viewed as five independent tests of the hypothesis. They should serve, however, to point out the general consistency—or lack of it— in the relation between social acceptance and sex-appropriate behavior as perceived by one's peers.

In the subsequent analyses, in those cases in which a significant F for interaction was found, comparisons were made of the means of high and low groups of boys on the characteristic under examination, of the high and low groups of girls, of the high groups of the two sexes, and of the low groups of the two sexes. These analyses are presented below.

TABLE 2

COMPARISON OF MEANS FOR THE FOUR SUBGROUPS ON THE WHO ARE THEY TEST

Variables on Which Grouping Is Based	*High Boys* $N = 11$	*Low Boys* $N = 11$	*High Girls* $N = 9$	*Low Girls* $N = 9$
Leadership	2.12	2.81	2.96	2.55
Practical Intelligence	2.37	2.80	2.73	2.42
Friendship	2.18	3.08	2.60	2.59
Aggression	2.56	2.53	2.82	2.16
Withdrawal	2.88	2.32	2.22	2.94

Leadership

As indicated in Table 1 a significant F of 7.24 for interaction was found, where the critical value for significance at the 5 per cent level with 1 and 36 degrees of freedom is 4.11. The findings for comparisons of the means are given immediately below. The critical value for the one-tail test of significance where the variance may be assumed to be homogeneous, as it was in this case, is 1.67.

a. High leadership boys were significantly more sex-appropriate in behavior than low leadership boys ($t = 3.16$).
b. There was no significant difference in girls of high and low leadership reputation.
c. High leadership boys were significantly more sex-appropriate in behavior than high leadership girls ($t = 3.53$).
d. There was no significant difference in boys and girls of low leadership reputation.

Practical Intelligence

No significant F ratio was found in this analysis of variance.

Friendship

Here an F of 6.09 was found for interaction. The four comparisons of means follow:

a. High friendship boys were significantly more sex-appropriate in behavior than low friendship boys ($t = 4.01$).
b. There was no significant difference in high and low friendship girls.
c. There was no significant difference in boys and girls of high leadership.
d. Low friendship girls showed significantly more sex-appropriate behavior than low friendship boys ($t = 3.03$).

Aggression

No significant *F* ratio was found in the analysis of the aggression data.

Withdrawal

An *F* of 12.98 was found for the interaction effect in the analysis of the withdrawal data. When comparisons were made of the means, all of the four examined proved to be significant as follows:

a. Low withdrawal boys showed more sex-appropriate behavior than high withdrawal boys ($t = 2.34$).

b. High withdrawal girls showed more sex-appropriate behavior than low withdrawal girls ($t = 2.74$).

c. High withdrawal girls showed more sex-appropriate behavior than high withdrawal boys ($t = 2.62$).

d. Low withdrawal boys showed more sex-appropriate behavior than low withdrawal girls ($t = 2.47$).

In summary of the tests of the second hypothesis, three of the five interaction effects predicted were found to occur at or beyond the level of significance employed in this study. When tests of the significance of differences in the means of the group are examined, it may be seen that the predicted difference occurs more frequently in the boys' data. Of the 12 comparisons of means for the three sets of data where significant *F*'s for interaction were obtained, six are cross-sex comparisons, three are of high and low boys, and three of high and low girls. All three of the boy-boy comparisons were found to be significant, while only one of the girl-girl comparisons was significant.

DISCUSSION

In the interpretation of the results of this study two cautions must be observed. The first of these is the possibility that in assigning ratings on the masculinity-femininity scale the boy and girl raters were responding to stereotypes of masculine and feminine behavior which have relevance to the items on the Who Are They scale. As a check on this the mean number of nominations given for each sex on the five categories was examined. For leadership the means for boys and girls, respectively, were 11.4 and 11.5. For practical intelligence these means were 8.6 and 9.4. For friendship the boys' mean was 4.8 and the girls' 4.6. On withdrawal the means were 7.4 and 8.2 for boys and girls in order. On aggression the mean was 8.6 for boys, 4.1 for girls. Despite the presumed existence in our culture of stereotypes concerning sex differences in leadership and withdrawal tendencies, the means for boys and girls are highly similar. It is only on the aggression dimension that the sexes differed markedly. Although the items on the Who Are They scale that deal with aggression are stated in terms of complaining, breaking rules, and quarreling rather than fisticuffs, it is still hardly surprising that boys should rate higher in view of the general perception in our culture of aggression as a masculine trait. It probably points out that the hypothesis of an interaction effect between sex and aggressive behavior was an unreasonable one in the first place.

A further caution which must be exercised in interpreting the results of this study is the limitation upon the population to which one can generalize. The current group is probably representative of laboratory school populations where these schools draw primarily from the middle class with a heavy weighting of professional occupations. The research of Rabban (11) and Pope (10) would suggest that the same relationships might not necessarily obtain in lower class groups.

Within these limits, certain results do appear as predicted. The first hypothesis is borne out in the case of girls; that is, high anxiety is associated with a high level of sex-appropriate behavior. Since the main effect for anxiety is significant, however, we have high anxiety related to high sex-appropriate behavior in boys as well, contrary to prediction. It is interesting to speculate as to why this should be true of boys. It is possible that striving to maintain a masculine role is for the boy of this age group stressful enough to be associated with manifest anxiety. Or one could argue contrariwise that only the boy who is secure in his masculine role is willing to admit to such unmanly characteristics. Further investigation might provide an answer to this question.

The second hypothesis is borne out in three of the five comparisons to the extent that the analyses of variance revealed significant *F* ratios for the interaction effects. When the *t* tests of differences in means are examined, however, what seems to appear is that the predictions for the boys are confirmed; that is, the higher the level of social acceptance, the higher the level of sex-appropriate behavior. With the girls, as referral back to Table 2 will show, the situation seems to be one of withdrawal's being associated with high sex-appropriate behavior, while, on the other indices, there is little difference in the means of the girls high and low on the characteristics under study. In other words, whether the girl is perceived as being sex-appropriate in behavior, for the most part, does not appear to be associated with the amount of social acceptance she receives.

The findings with respect to social acceptance and sex-appropriate behavior were entirely in line with what we might predict from the exhaustive studies of Tryon (14) and Tuddenham (15, 16) upon evaluation of children's personality characteristics by their peers. In the present study it is true that the effect we found of confusion in the girls' role occurs at an earlier age than in Tryon's sample. The different techniques used, the nature of the present sample, and the two decades that have elapsed are all possible causes. There does seem evidence here, however, for the belief that, to the girl approaching adolescence, achieving an appropriate sex role will be accompanied by difficulties arising from the lack of consistency in the social acceptance which is accorded the feminine and the masculine qualities she is perceived to exhibit. Where the tomboy is as well liked as the "young lady"—and sometimes better—it is difficult indeed to know what role to follow.

But there is another side to the picture, the plight of the boy who does not adhere to the masculine pattern that seems to follow along so clearly with social acceptance. The approved pattern may be much clearer and more consistent than it is for the girl, but it also may be that deviations from this approved pattern are far less tolerated for the boy than they would be in the girl.

Certainly, further research is needed to explore more completely the relationships demonstrated in miniature in the present study. It would be advantageous to make studies both up and down the age scale. Comparisons of other social class groups might reveal material of interest. The general form of masculinity-femininity peer rating which this study has employed would seem to have value as an instrument for use in the search for the significant correlates of sex-appropriate behavior. If the present form holds up with wider applications, it would be of value in tracing down to a younger age some of the relationships which have been found to exist in adult populations.

SUMMARY

Children in a sixth and a seventh grade class were tested on three instruments, the Who Are They reputation test, the children's manifest anxiety scale, and a masculinity-femininity scale devised for the present study. On the basis of the first two instruments children were divided in two sex groups of high and low anxiety, and of high and low social acceptance on the five categories derived from the Who Are They test.

Analyses of variances were performed with a 2×2 factorial design. Subsequently, differences in means of the subgroups were examined by means of t tests where F ratios for interaction proved significant. On this basis children high in anxiety were found to be significantly more sex-appropriate in behavior than children low in anxiety. On the Who Are They instrument, three of the five analyses showed significant interaction effects, effects which had been predicted for all five categories. Further analysis indicated that high social acceptance in boys was associated with a high degree of sex-appropriate behavior as perceived by peers. With girls the result was less clear-cut. In one of the three analyses where significant F's for interaction were found, acceptance was found to be associated with a low level of sex-appropriate behavior; in the other two comparisons differences between means were not significant.

The results are interpreted as indicating a lack of clarity in the expectancies of the girl nearing adolescence as she is faced by the task of achieving an appropriate sex role. Further research is needed to determine whether this effect exists in a broader population and a wider age range.

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DEVELOPMENTAL STUDIES OF PARENT-CHILD RESEMBLANCE IN INTELLIGENCE[1]

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A number of developmental studies have reported that the mental test scores of children under two years have little or no relationship to parental ability as measured by the number of years of schooling, ratings of intelligence, or test scores (1, 2, 6). When these same children are retested at later ages, their mental test scores are found to be significantly correlated with parental ability. A crucial question is the extent to which these age changes in relationship are due to environmental factors, or to intrinsic differences in the patterns of mental growth. One way in which this increasing resemblance can be evaluated is by comparing the age changes in the correlations which occur among children reared by their own parents in contrast to those reared apart from their parents.

In this report we shall compare the age changes in relationship for two distinct groups, each of over 100 children, who were tested at various ages between 21 months and 16 years; and then contrast this trend with that reported by Skodak and Skeels for 100 adopted children who were tested four times between their second and fourteenth year (6).

In the Guidance Study at the University of California Institute of Child Welfare, a sample of 252 children who were representative of those born in Berkeley during an 18-month period were divided into equivalent subsamples called the "Guidance" and "Control" groups. This division of the main sample was made on the basis of certain socioeconomic variables before the mental testing program was begun (5). The children in the two groups were first brought to the Institute for mental tests at the age of 21 months. The tests used at this age level and at the subsequent testings during the preschool years were the California Preschool Schedules (*see*

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[1] Acknowledgment is due Harold E. Jones and John P. McKee for their helpful suggestions and to the U.S. Public Health Service for clerical and statistical assistance.

Table 1). Beginning at six years, the 1916 Stanford Revision of the Binet Scale was the test used, with a shift to the 1937 Revision at age eight. The parents were not given intelligence tests but the number of years of schooling is known for both parents. In addition, in the Guidance group, ratings (on a seven-point scale) of the mothers' intelligence were made when the children were between 3½ and 4½ years by staff members who had had many hours of discussion with the mothers.[2] The correlation between these ratings of the mothers' intelligence and the number of years of schooling of the mothers is +.73. In fact, in this study all measures which reflect the ability of the parents were intercorrelated to about the same extent (socioeconomic status correlates with both mothers' and fathers' schooling +.73; mothers' and fathers' schooling correlate +.74). The

TABLE 1

CORRELATIONS OF THE CHILDREN'S MENTAL TEST SCORES WITH THE MOTHERS' EDUCATION AND RATINGS OF HER INTELLIGENCE

G = Guidance Group C = Control Group

Age in Years	Mental Test Given Children	Number of Cases			Relation of the Children's Mental Test Scores × Mother's Education			Ratings of Mother's Intelligence
		G	C	G+C	G	C	G+C	G
					r	r	r	r
1¾	Calif. Preschool	117	117	234	.13	00	.06	.11
2	Calif. Preschool	113	...	113	.07	..	.07	.08
2½	Calif. Preschool	114	...	114	.10	..	.10	.06
3	Calif. Preschool	116	113	229	.10	.08	.09	.17
3½	Calif. Preschool	107	108	215	.27**	.25**	.26**	.39**
4	Calif. Preschool	105	106	211	.22*	.25**	.23**	.38**
5	Calif. Preschool	104	106	210	.45**	.25**	.35**	.53**
6	Stanf.-Binet (1916 Rev.)	109	102	211	.27**	.37**	.32**	.40**
7	Stanf.-Binet (1916 Rev.)	104	104	208	.35**	.33**	.33**	.51**
8	Stanf., Form L	100	98	198	.34**	.32**	.33**	.54**
10	Stanf., Form L or M	105	92	197	.33**	.34**	.34**	.52**
12 or 13	Stanf., Form L or M	98	94	192	.38**	.38**	.38**	.54**
14 or 15	Stanf., Form L or M	90	78	168	.39**	.30**	.35**	.59**

* Significant at the 5 per cent level.
** Significant at the 1 per cent level.

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[2] Ratings used were an average of these ratings made independently for each mother by a psychiatric social worker and Dr. Jean W. Macfarlane, Director of the Guidance Study. The ratings were made without reference to the mental test scores of the children who were tested on the then new California Preschool Scales. These scales were scored in final form several years after the parental ratings were assigned.

relationship between these indices of parental ability and the children's mental test scores was reported earlier for the age period 21 months to eight years (2).

The correlation between the education of the mothers and the children's mental test scores at 21 months was negligible but between 3 and 3½ years, the relationship became significant (*see* Table 1). To check the validity of this age trend, correlations were computed separately for the two subsamples of the total Guidance Study sample. The results of this comparison are shown in Table 1 and Figure 1. The finding that these subsamples exhibit essentially the same age changes in relationship suggests that the trend is a valid one and would be duplicated in comparable developmental studies; in fact, Bayley (1) has reported a similar trend in the Berkeley Growth Study.

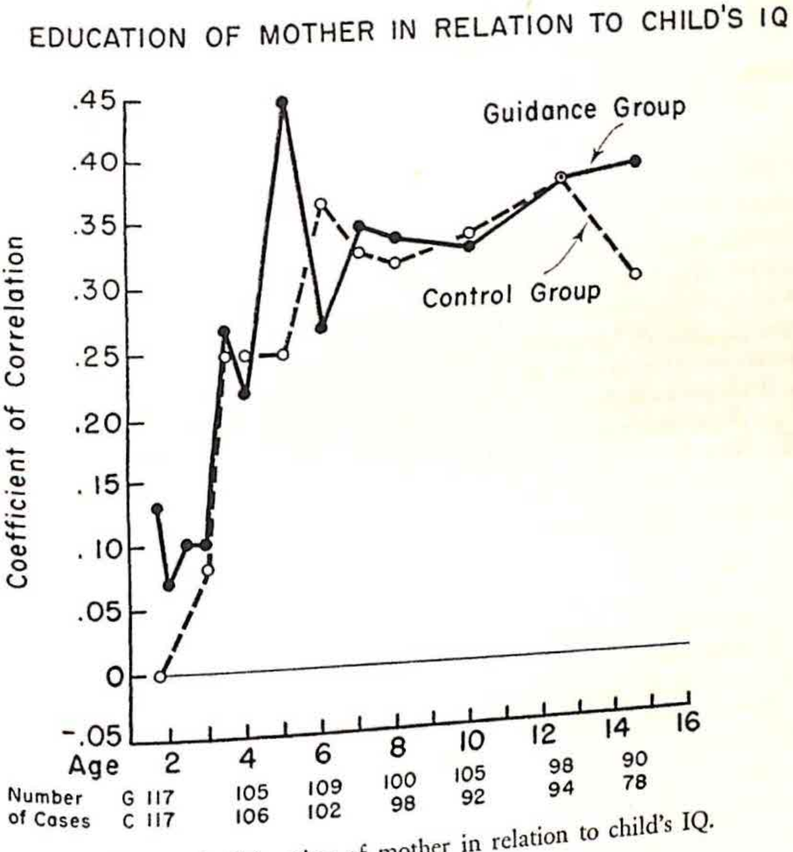

FIGURE 1—Education of mother in relation to child's IQ.

In a study of 100 adopted children, Skodak and Skeels report that adopted children whose true mothers tested quite low in intelligence earned mental test scores which were substantially higher than those of their mothers (6). In addition, these authors report the relation of various indices of ability of the true mothers to the mental test scores of their children at four successive age levels. It is these correlations which interest us and which we wish to compare with the relationships obtained in the Guidance Study for children reared by their own mothers.

Regardless of the index used (IQ or number of years of schooling), Skodak and Skeels found that the correlation between the *true* mother's ability and her child's mental test scores at approximately two years of age is insignificant. By the time the adopted children reached four years on the average, the correlations between their IQs and the true mothers' education and intelligence are +.31 and +.28, respectively. These correlations are significant at the 5 per cent level. In contrast these authors found *no* relationship at any age between the mental test scores of these same children, who were adopted in the first months of life, and their *foster*, or adopting, mothers' education. These highly significant results are especially interesting when compared with the findings for the groups of children who have always lived with their own parents (1, 2).

In Figure 2, the mother-child correlations for the total Guidance Study sample (combined Guidance and Control groups) are compared with those reported by Skodak and Skeels for the adopted children. It will be noted that the true mother-child correlational age trends in their study and ours are as alike as those shown in Figure 1 for the two subsamples of our group. The similarity in the changing relationships with age for the Guidance Study group who always lived with their parents as compared with the Skodak-Skeels group who never lived with their parents is impressive. However, the final correlations between the index of maternal ability (number of years of schooling) and the children's mental test scores is only +.35 for the children reared by their true parents; and +.32 for the children not reared by their true parents, indicating that less than 15 percent of the variance in the children's scores can be accounted for by this very rough index of the true mother's ability.

The fact that the individual differences in the adopted children's mental test scores are not related to the foster mothers' education at any age is also shown in Figure 2. This finding is surprising since the average IQ of the adopted children at 13½ years was 106, while the average IQ of their true mothers was reported as only 86. A regression upward toward the mean is to be expected but not beyond the mean. Our interpretation of these findings is that the educational level of the true mother roughly indicates her intellectual capacity and this capacity is at least somewhat determined by genetic factors which she, in turn, transmits to her children. The difference in the level of ability of the adopted children and their true mothers may be due in part to systematic undermeasurement of the true mothers' intelligence and in part to the generally favorable environment provided by the foster families. It is conceivable, and it seems to us probable, that in this sample certain unmeasured family variables such as the affection and emotional support given the foster children were as important as purely intellectual stimulation in nurturing the mental growth and performance of these foster children.[3]

A better indication of the age changes in the mother-child resemblance would probably have been obtained if optimal test scores had been available for the mothers in these two studies. In the Skodak-Skeels investigation, 63 of the mothers were given individual mental tests but these mothers were tested shortly after the babies' births "usually after the mother had decided to release the baby for adoption." The authors note that "these IQs were consistent with other evidence of the mental adequacy of the mothers" and the "tests were never given when the mother was ill or obviously upset," but it is unlikely that these IQs reflect the optimum performance of which these mothers might have been capable under more favorable conditions. However, even these IQs showed age trends in relationship to the mental test scores of the children which were similar but tended to run a little higher than those obtained for the mothers' education.

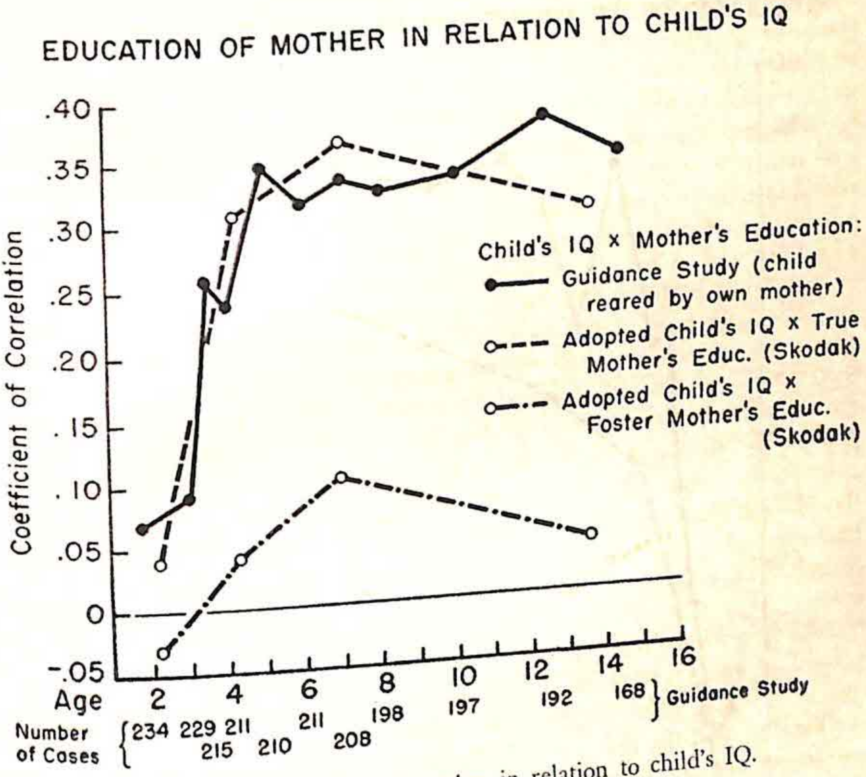

Figure 2—Education of mother in relation to child's IQ.

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[3] The importance of various non-intellectual environmental factors to the mental test scores of the children in the Guidance Study will be presented later in a report entitled "Mental Growth in Relation to Intellective and Non-Intellective Parental Variables."

The mother-child correlations in the Guidance Study are higher when based on ratings of the mother's intelligence than when education is used as an index of the mother's ability (Table 1). They are, in the former instance, comparable with the correlation of .49 reported by Jones in a study in which testing procedures for both parents and children were carefully controlled (4).

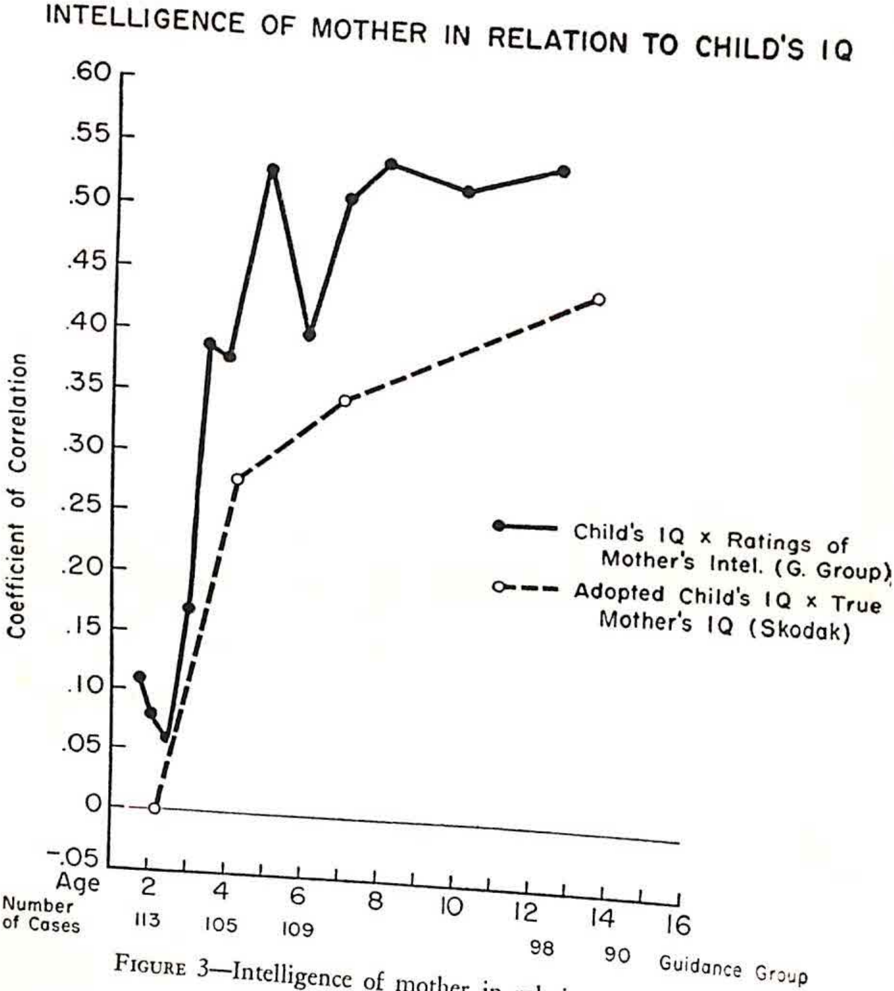

FIGURE 3—Intelligence of mother in relation to child's IQ.

In Figure 3, the age change in mother-child resemblance in intelligence reported by Skodak and Skeels for 63 of the adopted children is compared with the findings for the Guidance group where the measure of maternal intelligence was an averaged rating. The correlations obtained in the Guidance group are higher than those reported for the adopted children. This latter difference may be due to differential environmental stimulation by the more intelligent mothers in the Guidance group but there is also the likelihood in the Skodak-Skeels study of an unequal effect of stress on the mothers' IQs. These findings certainly suggest that the variations in the magnitude of the correlations depend somewhat on the sensitivity of the measures of maternal intelligence, but the question of whether the differences in the correlations shown in Figure 3 are entirely attributable to differences in the validity of the measures of mothers' intelligence cannot be answered by these studies.

TABLE 2

CORRELATIONS OF THE CHILDREN'S MENTAL TEST SCORES WITH THE FATHERS' EDUCATION

G = Guidance Group C = Control Group

Age in Years	*Mental Test Given Children*	*Number of Cases*			*Relation of the Childrens' Mental Test Scores to the Father's Education*		
		G	C	G+C	G	C	G+C
					r	*r*	*r*
1¾	Calif. Preschool	117	117	234	.10	.06	.07
2	Calif. Preschool	113	...	113	—.05	..	—.05
2½	Calif. Preschool	114	...	114	.03	..	.03
3	Calif. Preschool	116	113	229	.01	.19	.11
3½	Calif. Preschool	107	108	215	.17	.25**	.21**
4	Calif. Preschool	105	106	211	.17	.30**	.24**
5	Calif. Preschool	104	104	208	.40**	.19*	.29**
6	Stanf.-Binet (1916 Rev.) ..	109	102	211	.24*	.36**	.30**
7	Stanf.-Binet (1916 Rev.) ..	104	104	208	.37**	.43**	.40**
8	Stanf., Form L	100	98	198	.37**	.34**	.35**
10	Stanf., Form L or M	105	92	197	.36**	.32**	.34**
12 or 13	Stanf., Form L or M	99	94	193	.45**	.33**	.39**
14 or 15	Stanf., Form L or M	90	78	168	.48**	.26*	.37**

* Significant at the 5 per cent level.
** Significant at the 1 per cent level.

The correlations between the number of years of schooling of the father and the children's mental test scores at successive ages are reported for the Guidance and Control groups separately and combined in Table 2. Although there are a few coefficients in this table which appear too high or too low in relation to the trend (e.g., the correlations of +.40 at five years for the Guidance group and +.43 for the Control group at seven years), the age changes are similar to those found between the mental test scores of these children and the mothers' education. The relationship between the number of years of schooling of the father and the children's test scores is negligible at 21 months (+.07) and 3 years (+.11) but is significant at the 5 per cent level at 3½ years (+.21) and reaches a high of +.40 at 7 years, thereafter ranging from +.34 to +.39. The trend of the age changes in relationship between the children's mental test scores and the fathers' schooling is similar in the two groups (Guidance and Control) in spite of the above mentioned inconsistencies. In Figure 4, the correlations for these two groups combined are compared with the findings for adopted children in relation to the education of their true fathers. The correlations

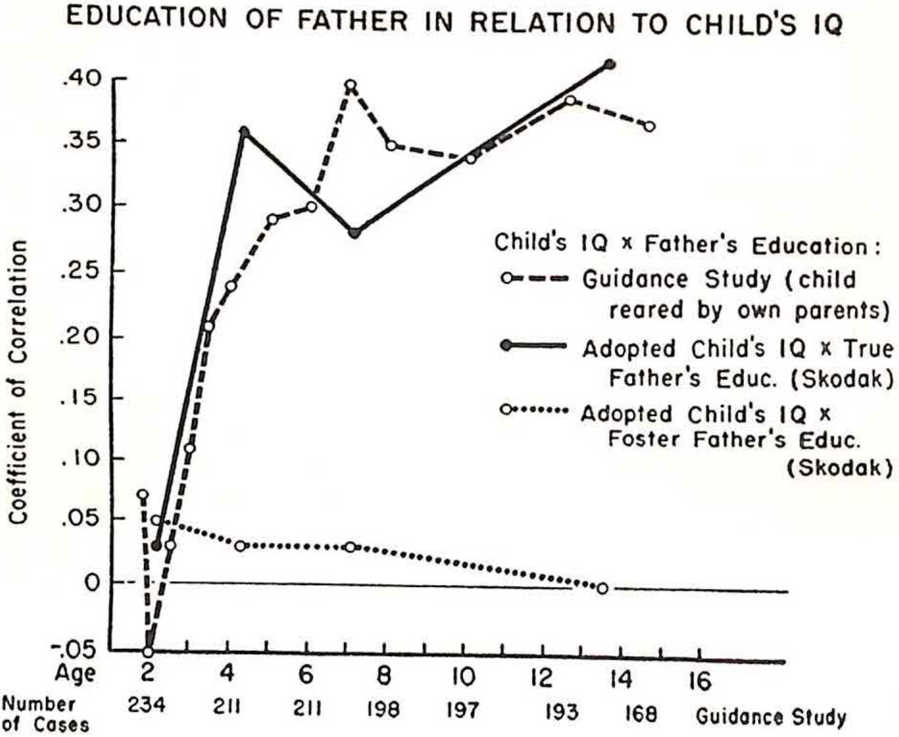

FIGURE 4—Education of father in relation to child's IQ.

between the mental test scores of the adopted children and the education of their true fathers were computed from the raw data presented by Skodak and Skeels (*see* Table 3). The impressive fact shown by Figure 4 is that the trend in relationships for the adopted children resembles so closely that found for the children reared by their own parents. Since the relationships obtained in the Guidance Study are no higher than those found for the adopted children, we may infer that the more highly educated fathers do not offer differentially more stimulating environments to their children. This inference is confirmed by the findings for the foster fathers shown in Table 3.

TABLE 3

CORRELATIONS BETWEEN THE CHILDREN'S MENTAL TEST SCORES AND THE FATHERS' EDUCATION (SKODAK-SKEELS)

Average Age of Adopted Children in Years	*Mental Test Given Children*	*True Father's Education × Child's IQ* $N = 60$	*Foster Father's Education × Child's IQ* $N = 100$
		r*	r
2-2	Kuhlman or 1916 Stanford-Binet	+.03	+.05
4-3	Stanford-Binet (1916 Rev.)	+.36**	+.03
7-1	Stanford-Binet (1916 Rev.)	+.28**	+.03
13-6	Stanford, 1937 Revision	+.42**	+.00

* These correlations were computed from the original data published by Skodak and Skeels (6).

** Significant at the 1 per cent level.

INDIVIDUAL MENTAL GROWTH RECORDS

The mental growth patterns for individual children have been considered in relation to the parental ability. The method used was to convert both the children's mental test scores and the average of the number of years of schooling of the parents into standard scores, and then note the age level at which the child's mental test SD score reaches the parental SD score with respect to educational level. Using this technique, Bayley presents three cases from the Berkeley Growth Study in which the mental test SD scores of the children reaches the parents' relative educational level at ages 4, 8, and 16 years, respectively, after a period of scoring above or below the parental status (1). Inspection of individual mental growth records in the Guidance Study also suggests that there are marked differences in the ages at which the children's scores reached the parental level of ability, as indicated by their education. Twelve cases are shown in Figures 5, 6, 7.

In Figure 5, the mental test scores of four children of highly educated parents are shown. These children begin to resemble their parents in ability at ages 2½, 4, 8, and 18 years, as judged by the comparison of the standard mental test scores of the children and a standard score based on the averaged years of education of the two parents.

Figure 6 shows the low or decreasing IQs of children of parents of average or less than average education. Here again, the children vary with respect to the age at which their mental scores are comparable with the educational level of their parents.

In Figure 7, the scores of four children whose IQs fluctuate markedly may be seen in relation to their parents' education level. At certain ages,

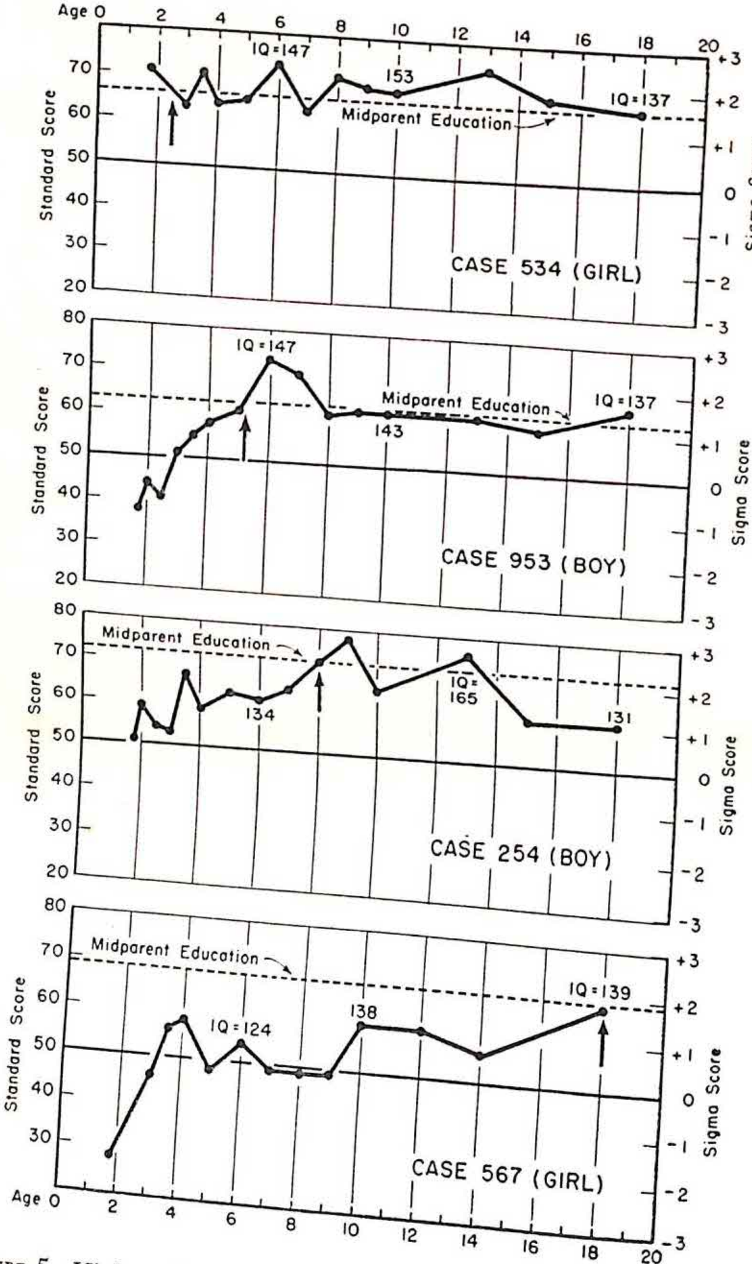

FIGURE 5—High or increasing IQs of children of highly educated parents.

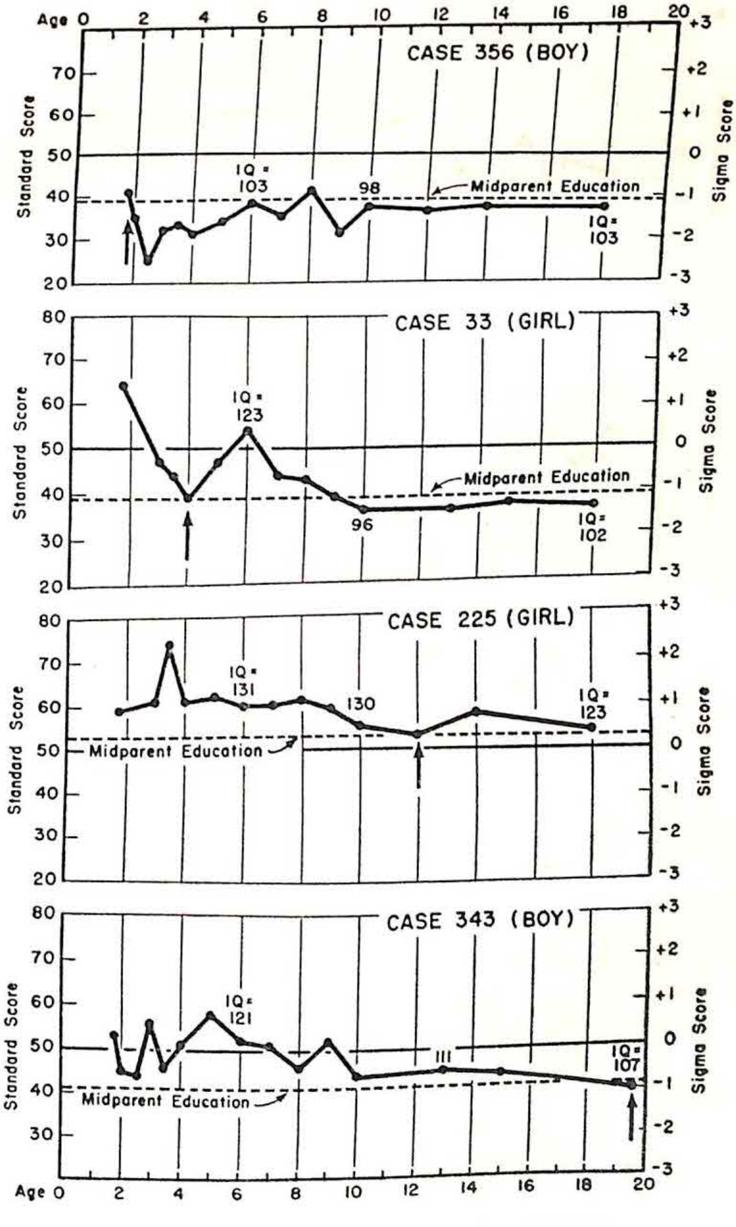

FIGURE 6—Low or decreasing IQs of children of parents of average or little education.

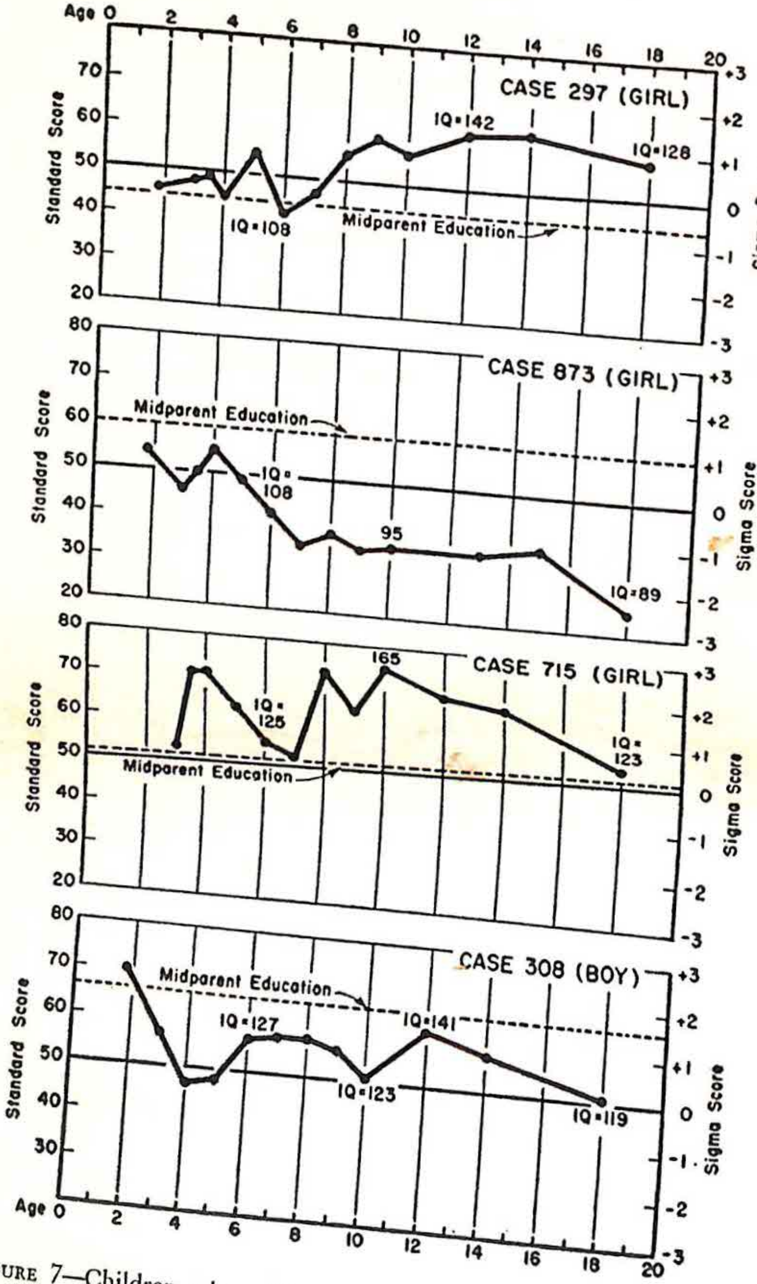

FIGURE 7—Children whose IQs vary in relation to parental education.

the IQs of these children reach a status which is comparable with that of their parents and then deviate to a position which is substantially above or below that of the parents. Case 873 is an unusually shy, inhibited girl who was so withdrawn that she did not want to go to school. The mother of this girl said that she was less precocious than her other children so perhaps this decreasing IQ may be accounted for in part by emotional factors and in part by the fact that she has less capacity than would be expected in this family. Consideration of these cases suggests the great individuality in patterns of mental growth and that, although the trend is toward an increasing resemblance between parents and children, the patterning varies markedly.

SUMMARY AND CONCLUSIONS

The increasing parent-child resemblance in mental ability found for two groups of children reared by their own parents has been compared and found to be similar to that reported for a group of children reared from early infancy by foster parents (6). The ability measures used in both studies were, for the children, individually administered intelligence tests, and for the parents, the number of years of schooling; and additionally for the mother, test scores and ratings. The finding that the parent-child resemblance in ability follows the same age changes in the two studies, even though the true parents did not rear the children in the Skodak-Skeels group, suggests that the existing relationship is largely due to genetic factors which tend to become manifest in the child during the later preschool years. Although the group age trends in relationship for both the adopted and non-adopted children are similar, the extent of the relationship is of low predictive value. There were wide individual differences in the ages at which children achieved mental test standard scores which were comparable with their parents' standard scores.

The fact that the parent-child resemblance is no greater for children reared by their own parents and the further fact reported by Skodak-Skeels of no relationship between the children's mental test performance and the foster parents' ability suggest that the education of the parents per se is not an environmentally important factor and that the obtained parent-child correlations reflect individual differences which are largely genetically determined.

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FREQUENCY OF REGURGITATION IN INFANCY AS RELATED TO THE AMOUNT OF STIMULATION RECEIVED FROM THE MOTHER[1]

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The psychological importance of gastro-intestinal disturbances in the infant has been stressed by Ribble (7), Sullivan (10), Escalona (1), Montague (4), Sontag (8, 9), and Laybourne (3). Of these, perhaps Ribble (7) has given the most precise statement of the problem and of the mechanism involved: She states that, ". . . the gastro-intestinal functions are easily disturbed as is shown by the frequency of regurgitation, hiccoughs, and diarrhea" (p. 630) and that these disorders may arise from "inadequate 'mothering'" (p. 633), emotional disturbance in the mother and a disturbance of "mothering" activities (p. 633). The "mothering" activities such as handling, fondling and rocking she has termed "stimulus feeding" (p. 632) and she maintains that such stimulation over a prolonged period results in improved digestion (p. 631). While the evidence she presents in support of this hypothesis has been critically evaluated by several writers (5, 6), they present no experimental test of the hypothesis. The notion, that a decrease in gastro-intestinal disorder as shown in reduced frequency of regurgitation, will result from an increase in stimulation of the infant by the mother is the problem investigated in this study.

SUBJECTS AND PROCEDURE

In order to obtain subjects for the study, letters explaining something of its nature were sent to the parents of 400 infants born in the Eugene-Springfield-Coburg area of Oregon between November 15, 1953, and

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[1] The data analyzed in this study were collected while the investigators were at the University of Oregon. A first report on the results was presented at the thirty-fourth meeting of the Western Psychological Association (2).

[2] At the time of the final analysis of the data the second author was a U.S. Public Health Service Research Fellow of the National Institute of Mental Health.

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January 30, 1954. Eighty-eight parents responded favorably and returned an enclosed questionnaire. The 55 of those reporting some amount of regurgitation were selected as subjects. Of these, 46 completed four weeks of observation and 38 completed the five weeks of the study.

The mothers of the infants selected for the study were interviewed with regard to certain child rearing and feeding practices, the behavioral and gastro-intestinal reactions of the child, and the educational status of the parents. They were told that this was a pilot study to determine the frequency of various gastro-intestinal reactions of the child, which it was hoped would lead to a more intensive investigation of the causes of such reactions, and that it was also directed at obtaining further information about the development of the child's vocalizations. They were given a small spiral pad with a pencil attached and instructed to record the incidence of burps, regurgitations and feedings, and the occurrence of new vocalizations. (Regurgitation was defined as the spitting up of any amount of food once it had been swallowed.) The importance of recording these events as they took place was emphasized. Either following the interview or within the next few days MMPI's were administered to the mothers. (The analysis of these data will be presented in a later paper.)

The infants were randomly assigned to either an experimental group or to a control group during the second week of the study. The mothers of the experimental subjects were told that the investigators wished to test the hypothesis suggested by some writers that close contact with the infant and stimulation of the infant by the mother would both increase the child's vocal activity and advance his speech development. They were requested to increase their stimulation of the child before each feeding for at least 10 minutes more than they had indicated in the original interview, or at least 10 minutes more than their current practice (whichever was greater). It was stressed that this should supplement, not replace, other attention received by the child. The investigators explained that increased stimulation meant handling, rocking, swinging, rolling on the bed, fondling, tickling, bouncing, etc., anything which would "let the child know" that the mother was directing attention to him, and that this "stimulus feeding" should be done by the mother herself. A two-week period of increased stimulation was followed by a return to "normal" handling.

Since the incidence of regurgitation may decrease with age during the first year, it was necessary to match experimental and control subjects on the basis of age. It proved possible to obtain 21 pairs, i.e., 21 controls on whom records were available for essentially the same age interval as for 21 individuals in the experimental group. In 17 pairs the age mates were within three days of age. In the remaining four pairs, they were within two weeks of the same age.

The parents of the subjects represent a superior group both educationally and socioeconomically. Except in the case of six of the families, one or both parents had some college experience, all except one of the families had a telephone, and the majority had their own automobiles and were buying their own homes.

TABLE 1

WEEKLY INTERCORRELATIONS OF FREQUENCY OF REGURGITATION

A. Control Group

	Week 1	*Week 2*	*Week 3*	*Week 4*	*Week 5*
Week 1		.98			.78
Week 2			.82		
Week 3				.90	
Week 4					.92

B. Experimental Group

	Week 1	*Week 2*	*Week 3*	*Week 4*	*Week 5*
Week 1		.98			.86
Week 2			.92		
Week 3				.96	
Week 4					.93

RESULTS

Consistency

In order to determine the consistency of regurgitation as recorded by the mothers during the five-week period of observation, the correlations between frequencies of regurgitation for adjacent weeks were calculated. These relationships, given separately for the control and experimental groups in Table 1, indicate that from week to week there was a high degree of consistency of the individual relative to the group. The relationships between the frequencies recorded in the first and fifth weeks, also included in Table 1, suggest a strong tendency for the individual to maintain his same relative position on this variable during the period of early infancy.

The relationships reported above are based on subjects who differ in age by as much as three months. Inasmuch as regurgitation probably decreases with age the question arises as to whether the high consistency coefficients obtained are a partial function of the heterogeneity of the samples with respect to age. In order to determine whether or not this was the case, a consistency coefficient was determined for those 22 infants who were in the study between the ages of 99 and 113 days, the age interval which included the largest number of subjects. The obtained correlation between the first and second weeks of this period was .94. The consistency was also determined for those of this group who remained in the study until 120 days of age. For 17 infants the correlation was .98 between the first and third weeks of this period and .95 for the second and third weeks. For comparable time intervals, these correlations are not significantly different from those presented in Table 1. As a final check, the incidence of regurgitation for these subjects for the age period of 99–106 days was correlated with the frequency of regurgitation recorded during the first week of the experimental period. The obtained correlation was .92. In the light of these results there would appear to be no basis for believing that heterogeneity with respect to age materially affected the consistencies reported above.

A problem of perhaps as much importance as the consistency of recorded observation is the agreement of "casually noted" frequency and objectively recorded frequency; in other words, assuming the accuracy of the record, what is the veracity of "anecdotal" reports as given in the mail-in questionnaire. The correlation between frequency *recorded* during the first week of the investigation and the frequency *reported* on the mail-in questionnaire was .82. A comparison of this value with those obtained in Table 1 suggests that at least in some areas mothers are able to report fairly accurately their children's behavior. However, the possibility must

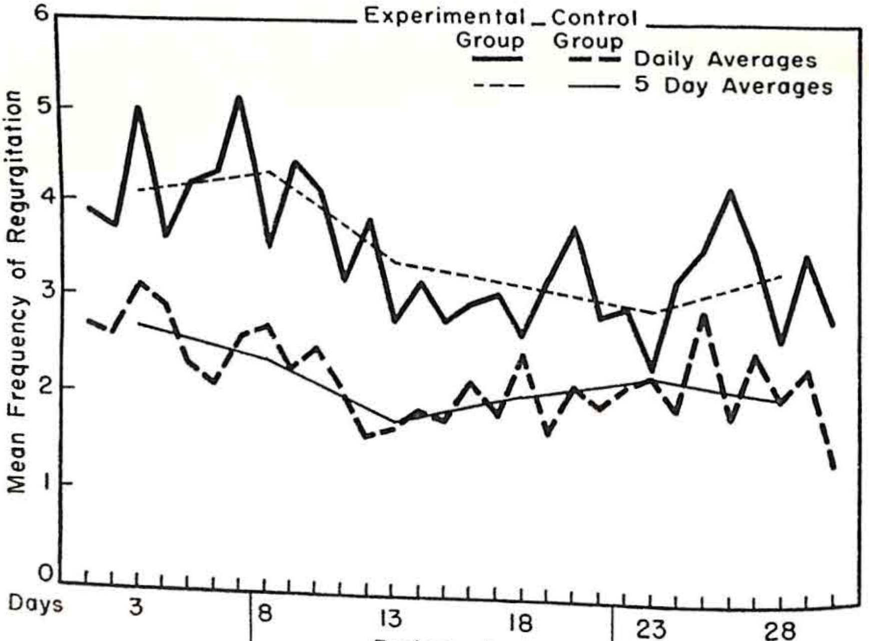

FIGURE 1—Frequency of regurgitation during the period of the study.

be recognized that this relationship could be spuriously high. Although it seems unlikely, the mother's recall of her answers in the initial questionnaire and interview conceivably could have biased her subsequent tally of the events. (In the absence of an additional observer the accuracy is indeterminable for both the mother's report in the interview and her daily record of incidence of regurgitation.)

A reduction in frequency of regurgitation during infancy is supported by casual observation. Such a reduction is evident in both the experimental and control groups as shown in Figure 1 where the averages for five-day intervals are superimposed on the daily averages. The mean change in frequency of regurgitation for the total group was determined between the first and third weeks, the period of most rapid change; the mean

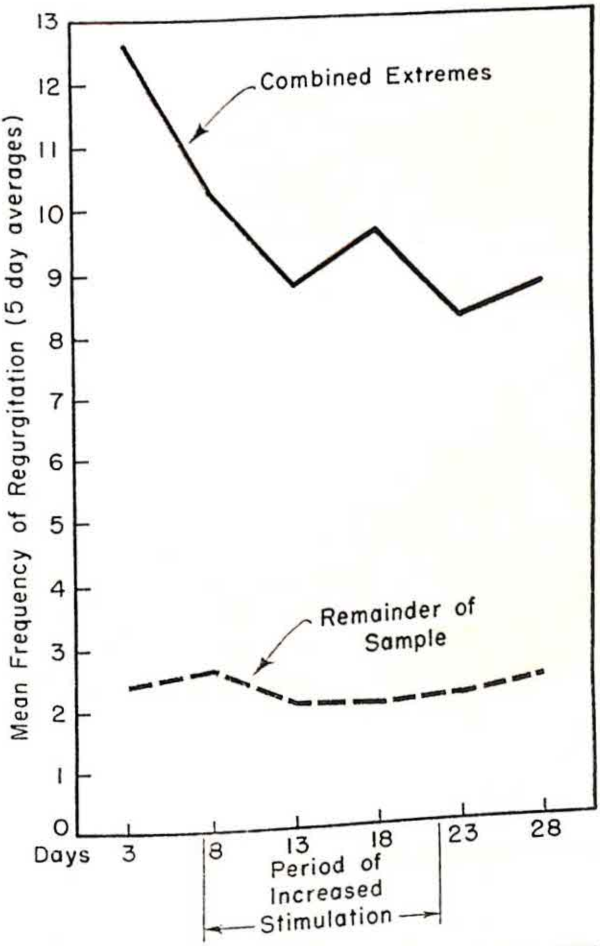

FIGURE 2—Frequency of regurgitation in the four extreme cases as compared with the remainder of the sample.

change of 5.8 regurgitations was significant at the 1 per cent level ($t=2.85$). An inspection of the data suggested to the authors that much of the drop in frequency was due to a reduction in the incidence of regurgitation in the extreme cases. To illustrate the contribution of the extreme cases to the decrease, the two most extreme ones during the first week of the period were determined for both groups; the five-day averages for this group of four subjects are compared in Figure 2 with the averages for the remainder of the sample. This figure suggests that the decrease in frequency during the period of the study was limited chiefly to the extreme cases.

The Effect of "Stimulus Feeding" upon the Frequency of Regurgitation

In order to determine if stimulation of the experimental group materially affected the incidence of regurgitation, the two groups were compared on the change in frequency from the first to the third week, the period of most rapid decrease. While the difference in change favored the experimental group, it was not significant ($t = 1.44$). An inspection of the data (cf. Figure 1) indicates that the insignificantly greater reduction in the experimental group is due to a chance concentration of extreme cases in this group and is probably to be interpreted in terms of the regression of these cases toward the mean. Thus, by chance, the assignment of cases to the experimental and control group biased the results in favor of the hypothesis. However, even thus biased, the results cannot be accepted as support for Ribble's hypothesis.

SUMMARY AND CONCLUSIONS

A number of writers have maintained that the infant's gastro-intestinal functions are easily disturbed as is shown, for example, in the frequency of regurgitation, and that the stimulation of the child by the mother over a prolonged period results in improved digestion. To test this hypothesis, 55 mothers whose infants showed some amount of regurgitation were requested to record the incidence of regurgitations and other reactions as they occurred. The subjects were randomly assigned to either a control or an experimental group. When the groups stabilized in terms of continuing participation, the subjects in the experimental group were paired with those in the control group on the basis of age. This procedure yielded 21 pairs.

The mothers in the experimental group were requested to increase the stimulation of their child for an additional 10 minutes prior to each feeding with the explanation that this was thought by some to speed language development. Following a two-week period of increased stimulation, the mothers were asked to return to their usual regime.

A comparison of the data thus obtained indicates that there is a decrease in regurgitation with age, but that the rate of decrease is not significantly affected by increased stimulation of the child. Some evidence suggests that the more extreme cases show the greatest decrease, as would be expected in terms of regression towards the mean. It should perhaps be pointed out that over a long period of time, in any group of normal infants, one would find a decrease in the incidence of regurgitation. If such a group of subjects received increased stimulation, it would appear, in the absence of a control group, that a causal relationship existed. In this connection it might be noted that it does not appear that Ribble's observations involved the use of a control group.

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HANDEDNESS AND RIGHT-LEFT DISCRIMINATION[1]

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Hand preference in manual activity has long been a topic of investigative interest because of its association with the language functions and the concept of cerebral dominance. Similarly, the ability to discriminate between the right and left sides of one's body has claimed attention, although to a lesser degree than is the case with handedness. Psychologists have utilized measures of right-left discrimination as an index of general intelligence and in the genetic study of children's conceptions of space. Neurologists have been particularly interested in the ability ever since the demonstrations by Bonhoeffer (4) and Gerstmann (6) that impairment in right-left discrimination is not only related to the presence of cerebral disease but also may possess localizing significance. While right-left disorientation in "pure" form (i.e., unaccompanied by more profound disturbances in the body schema) is rather uncommonly encountered in adult patients with cerebral disease, recent investigative work (1) suggests that it may occur in a clinically significant proportion of brain-injured and defective children.

The question arises as to whether there is a relationship between these two aspects of "laterality" or "right-left" behavior, the motor aspect being represented by degree of hand preference and the perceptual aspect reflected in the ability to discriminate between the right and left sides of one's body. Theoretical considerations might lead one to postulate such a relationship on the supposition that the perceptual discrimination develops

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out of, and is in part determined by, differential motor usage of the two hands. It would then be hypothesized that an individual who has a decided preference for the use of either hand will show a more developed perceptual capacity than one who does not have such a preference. This hypothesis was put to test in the present study.

METHOD

The *Ss* were 66 kindergarten and grade school children, ranging in age from 4 years, 11 months, to 8 years, 5 months, in MA (Kuhlmann-Anderson Tests or California Mental Maturity Test) from 4 years, 11 months, to 10 years, 9 months, and in IQ from 80 to 137. There were 32 boys and 34 girls in the group. Each *S* was examined individually. Hand preference was always investigated before right-left discrimination.

Handedness was assessed by a 35-item test battery which was a slight modification of that described by Johnson and Davis (7) and which sampled a variety of activities (writing, erasing, cutting, folding, turning a dial, using a screwdriver, pointing, etc.). For purposes of analysis, performance was scored in terms of the degree of deviation in either direction from a "right-hand" score of 17–18, which would represent an equal incidence of use of either hand. Thus, the use of the right hand on 30 or on 5 of the 35 tasks earned the same deviation score of 12, the two performances differing only in direction but not in degree of deviation from nonpreferential use of the hands. If *S* used both hands in the execution of the task, as occasionally happened, the item was not counted and the score pro-rated on the basis of a reduced total number of items.

Right-left discrimination was assessed by a 16-item battery which was a slight modification of that previously described by Swanson and Benton (8) and which sampled four aspects of the ability, viz.: (1) with eyes open, identification of body parts; (2) with eyes open, execution of "crossed commands," e.g., touching left eye with right hand; (3) with eyes closed, identification of body parts; (4) with eyes closed, execution of "crossed commands."[2] Performance was scored in terms of the number of consistent discriminations, disregarding the correctness of the responses with respect to the verbal symbols, "right" and "left," i.e., *S* would make a perfect score if he consistently showed the left body part when asked to show the right and vice versa and if he showed complete reversal in the execution of "crossed commands." Since interest was focused on the discriminative ability per se rather than on whether *S* had learned specific language habits, it was considered that this type of scoring was superior on logical grounds to a more conventional scoring in terms of absolute correctness of response.

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[2] The modification of the original 20-item test battery consisted in the elimination of the four items dealing with identification of body parts on a front-view representation of a boy.

TABLE I

FREQUENCY DISTRIBUTIONS OF HANDEDNESS, HANDEDNESS DEVIATION AND RIGHT-LEFT DISCRIMINATION SCORES

Score	*Handedness*	*Handedness Deviation*	*Right-Left Discrimination*
34–35	2		
32–33	6		
30–31	9		
28–29	9		
26–27	12		
24–25	10		
22–23	5		
20–21	1		
18–19	3		24
16–17	2	3	19
14–15	1	6	3
12–13	..	9	9
10–11	1	12	8
8– 9	1	13	3
6– 7	3	11	
4– 5	..	5	
2– 3	..	2	
0– 1	1	5	

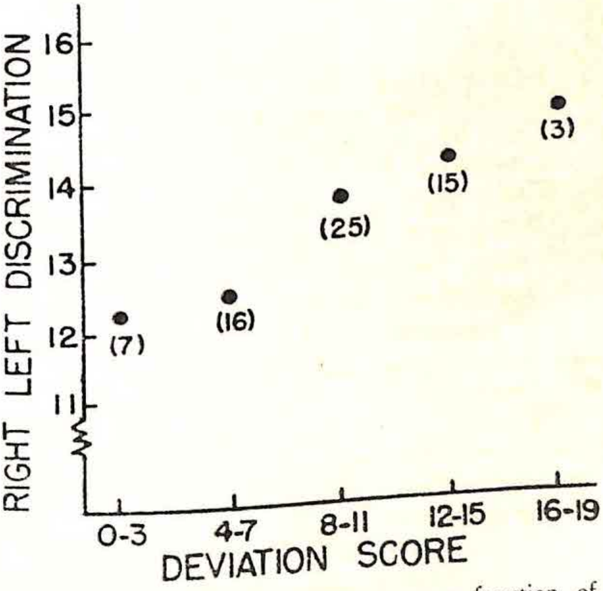

FIGURE 1—Mean right-left discrimination score as a function of handedness deviation score.

RESULTS

Table 1 shows the distributions of the "right hand" and the deviation scores on the hand preference test and of the right-left discrimination test scores. It will be noted that, as would be expected, the distribution of hand preference scores is skewed in the direction of preference for use of the right hand. However, the distribution of deviation scores is essentially normal. On the other hand, the right-left discrimination scores show a non-normal distribution with a concentration of perfect scores reflecting the low ceiling of the test which was employed.

The relationship between handedness, as measured by the deviation scores, and right-left discrimination is shown graphically in Figure 1 which represents mean right-left discrimination score as a function of handedness deviation score. It will be noted that the relationship between these variables is positive and approximately linear.

The product-moment correlation coefficients between handedness and right-left discrimination, as well as those among other possibly pertinent factors, are presented in Table 2. Inspection of this table of correlation coefficients indicates that the relationship between degree of unilateral hand preference and right-left discrimination is of small magnitude and of questionable significance. Variations in chronological and mental age do not appear to have an important influence on the size of the relationship in this sample of *S*s.

TABLE 2

PRODUCT-MOMENT CORRELATION COEFFICIENTS. VARIABLES: (1) HANDEDNESS DEVIATION SCORE, (2) RIGHT-LEFT DISCRIMINATION SCORE, (3) CHRONOLOGICAL AGE, (4) MENTAL AGE

Variables	*r*	*Variables*	*r*
12	.24*	13	.05
12.3	.24*	14	.19
12.4	.21*	23	.18
12.34	.22*	24	.19
		34	.74**

* $.05 < p < .10$ (two-tailed test).
** $p < .001$.

DISCUSSION

The finding of a small positive association between degree of unilateral hand preference in motor activity and level of right-left discrimination can be interpreted as providing some support for the general hypothesis that these two aspects of "laterality" are related to one another. This conclusion rests, of course, on the assumption that the observed correlation, while of small magnitude, is a significant one. However, even if this assumption is accepted, it is obvious that degree of unilateral motor preference can be only a minor determinant in the development of right-left discriminatory capacity in normal *S*s. Variation in learning experience or other factors must be invoked as the major determinants of differences in this perceptual ability.

It is possible that in pathological *S*s, such as brain-injured or defective children, a somewhat more impressive relation between the two variables would be observed. In analogous studies of the relation between right-left discrimination and finger-localization capacity, two behavioral skills that have been considered by clinical observers (2, 5) to show concomitant variation, such was found to be the case. In normal children these two functions showed a correlation coefficient of about .2, while in brain-injured and defective *S*s of comparable mental age, the correlation was about .4 (1, 3). These findings raise the question whether in pathological *S*s organic cerebral factors are not a more important determinant of the relationship between these two aspects of the "body schema" than is the case in normal *S*s. This might also be true of the relationship between degree of hand preference and right-left discrimination. However, judging from the trend of previous results such as those cited with regard to right-left discrimination and finger localization, it seems likely that the correlation would be at best only moderate in size and account for only a small proportion of the total variance in the functions. In any event, the present findings suggest a considerable degree of specificity in the status of these behavioral skills that are often grouped together by the clinical observer under a single concept such as "laterality" or the "body schema."

SUMMARY

Using young schoolchildren as *S*s, a study of the association between right-left discrimination and degree of unilateral hand preference, as measured by the extent of deviation from equal use of either hand in manual activities, indicate that the two behavioral variables were related to a small and questionably significant degree. Variations in chronological and mental age did not affect the size of the relationship in this sample of *S*s.

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SELF-CONCEPTIONS, MOTIVATIONS, AND INTERPERSONAL ATTITUDES OF LATE- AND EARLY-MATURING BOYS[1]

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While many intensive case studies show that personal and social adjustment during adolescence may be profoundly influenced by rate of physical maturation, there is a scarcity of systematic data on the relationship between the adolescent's physical status and his underlying motivations, self-conceptions and interpersonal attitudes. There is, however, a small body of evidence which demonstrates that greater physical maturity is associated with greater maturity of interest among girls (10) and that early-maturing boys differ from their late-maturing peers in both overt behavior and reputational status. In one study (8) in which a staff of trained observers assessed a large group of adolescents on a number of personality variables, boys who were consistently retarded in physical development were rated lower than those who were consistently accelerated, in physical attractiveness, grooming, and matter-of-factness; and higher in sociability, social initiative (often of a childish, attention-getting sort), and eagerness. Reputation Test (11) data indicated that classmates regarded the late-maturing boys as more attention-getting, more restless, more bossy, less grown-up and less good-looking than those who were physically accelerated.

On the basis of these findings, it may be inferred that adult and peer attitudes toward the adolescent, as well as their treatment and acceptance of him, are related to his physical status. This means that the socio-psychological environment to which late-maturers are subjected—and consequently the social learning situations they encounter—may be significantly different from that of their early-maturing peers. As a consequence, according to the ratings summarized above, they acquire different patterns of overt social behavior. It seems reasonable to hypothesize that groups

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[1] The TAT data for this study were obtained by Harold E. Jones in connection with a test program at the Institute of Child Welfare.

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differing in physical status will also differ in more covert aspects of behavior and personality.

Indirect evidence relevant to this hypothesis comes from an investigation of the long-term consequences of physical acceleration or retardation during adolescence. Jones (6) found that group differences in physique had practically disappeared by the time her early- and late-maturing subjects reached their early thirties. Nevertheless, young adults who had been physically retarded adolescents differed from those who had been accelerated in several important psychological characteristics. In general, it appeared that the adult subjects could be described much as they had been during adolescence. Thus, those who had been early-maturers scored higher on the good impression, socialization, dominance, self-control (low score on impulsivity), and responsibility scales of the California Personality Inventory, while those who had been slow in maturing scored higher on the flexibility scale. On the Edwards Personal Preference Schedule, early-maturers scored significantly higher on the dominance scale, while the late-maturing were high in succorance. Jones concludes that the early-maturing "present a consistently favorable personality picture with regard to . . . important social variables" (6). Moreover, there was some evidence that these men had attained more stable vocational adjustments than those who had been late in maturing. These group differences in later adjustment suggest that the sociopsychological atmosphere in which the adolescent lives may have profound immediate and enduring effects on his personality structure as well as on his overt behavior.

The present study was designed to investigate the relationship between maturational status and certain important, covert aspects of personality during late adolescence. Personality structure was assessed by means of the Thematic Apperception Test (TAT) which seems to be the most appropriate and sensitive instrument for this purpose. More specifically, on the basis of the literature reviewed above and other general works on the psychology of adolescence (1, 4, 5), we formulated and tested a series of propositions relating to differences between the physically retarded and the accelerated in self-conceptions, underlying motivations, and basic interpersonal attitudes. These variables were translated into TAT categories —needs (*n*), press (*p*), and descriptions (defined briefly in Table 1)— and the scores of early- and late-maturers in each of these categories were compared. The propositions and the rationale underlying them, together with the TAT variables involved, follow.

1. In view of their obvious physical retardation, relatively unfavorable reputations and disadvantageous competitive position in many activities, the late-maturing boys are more likely to have feelings of inadequacy. Hence, more boys in this group than in the early-maturing group are likely to have negative self-conceptions (TAT category: *negative characteristics*).

2. The adolescent in our culture generally desires some independence and adult status. This may be the source of a major problem for the

late-maturer, however, since he is often regarded and treated as a small boy by adults and peers and is not likely to be granted independence as early as physically accelerated boys. Therefore, it may be anticipated that more late- than early-maturers regard adults, particularly their parents, as dominating, forcing them to do things they don't want to or preventing them from doing things they want to do (high scores in *p Dominance*). Moreover, the parental treatment these boys experience and parental refusal to grant them independent status may be interpreted as personal rejection. Hence, we predicted that more late-maturing boys would score high in *p Rejection*.

3. These feelings of being dominated and rejected may result in attitudes of rebellion against the family and in feelings of hostility. We therefore expected that more of the late-maturing group would reveal strong aggressive needs (high scores in *n Aggression*) and desires to escape from (*n Autonomy—leaving parents*), or to defy, the family (*n Autonomy—defying parents*).

4. On the basis of the data indicating that slow-maturers showed a great deal of social interest (although often of an immature kind), we hypothesized that more members of this, than of the early-maturing group would reveal strong interests in friendly, intimate interpersonal relationships (high scores in *n Affiliation*).

5. Assuming that, as Jones and Bayley (8) suggest, the social initiative and attention-getting devices of the late-maturers are of a compensatory nature, we would expect this group to be basically dependent and to have strong needs for support from others. These should be manifest by higher scores in TAT *n Succorance* and *p Nurturance*. The latter may be considered a more indirect measure of dependence, a kind of wish-fulfilling view of the world as helpful and friendly.

6. The early-maturer, being regarded and treated as more adult, is more likely to become self-confident, and to acquire high status goals. For these reasons, we predicted that more of the physically accelerated would give evidence of high achievement goals (high scores in *n Achievement*) and concern with personal recognition (high scores in *n Recognition*).

7. Late-maturing boys in our culture probably face more problems of personal adjustment than do their early-maturing peers. As a result of this, they may become more aware of their problems, and, as the high degree of flexibility of young adults who had been retarded in maturing suggests, more insightful. Hence we predicted that they would be more willing and able than early-maturers to face their own feelings and emotions (low scores in the TAT variable *denial of feeling*).

In summary, we attempted to test seven propositions related to differences in the personalities of early- and late-maturing boys. It was hypothesized that more late-maturers would score high in variables relating to negative self-conceptions, dependence, aggression, affiliation, rebelliousness, and feelings of being dominated and rejected. More early-maturers, on the other hand, were expected to reveal strong achievement and recognition needs, feelings of personal success, and tendencies toward denial of feelings.

PROCEDURE

The 33 seventeen-year-old male subjects of this investigation were members of the Adolescent Growth Study which included a normal sample of boys in an urban public school system (3). The subjects of the present investigation represented two contrasting groups, selected on the basis of their physical maturity status: 16 of them had been among the most consistently accelerated throughout the adolescent period; the other 17 had been among the most consistently retarded.[2] All of them took the Thematic Apperception Test, which provides the basic data of this study, at age 17.

The TAT consisted of 18 pictures: nine from the Murray set which is now standard (cards 1, 5, 6, 7BM, 10, 11, 14, 15, 17); five pictures from the set generally used in 1938 when these data were collected (a man and woman seated on a park bench; a bearded old man writing in an open book; a thin, sullen, young man standing behind a well-dressed older man; a tea table and two chairs; an abstract drawing of two bearded men); and four designed especially for this investigation (the nave of a large church; a madonna and child; a dramatic view of mountains; a boy gazing at a cross which is wreathed in clouds).

The tests were administered individually. Each card was projected on a screen while the subject told a story which was recorded verbatim. Standard instructions were given for the Murray cards, and subjects were asked to describe the feelings elicited by the other four pictures. Most of the stories were brief, consisting of only one or two sentences.

As we noted earlier, each of the personality variables involved in the seven propositions was translated into a TAT scoring category. The scoring scheme involved counting the relevant needs, press, and descriptions of the heroes of the stories, the assumption being that the storyteller has identified with the hero: the hero's needs are the same as the boy's; the press that impinge upon the hero are the ones that affect the boy telling the story. A total of 20 needs, press, and descriptive categories, each defined as specifically as possible, was developed in the analysis of the protocols. A score for each subject for each TAT category was derived by counting the number of stories in which it appeared. A list of the categories used, together with brief descriptions of them, is found in Table 1.

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[2] The present sample includes 27 of Jones and Bayley's (8) 32 subjects (the 16 most consistently retarded and 16 most consistently accelerated boys in the study). The other five boys had not taken the TAT at age 17. The six subjects who were in the present study but not in Jones and Bayley's study are the three "runners-up" from each end of the physical maturity distribution, i.e., the three who were closest to the 16 most accelerated cases and the three cases next to the 16 most retarded.

To test the reliability of this analysis, one of the authors (PM) and another psychologist[3] independently scored 15 complete protocols (300 stories). The percentage of interrater agreement was 90, computed by the usual formula (number of agreements divided by number of agreements plus number of disagreements).

In order to eliminate bias, the scoring used in the present study was done "blind," that is, independently of knowledge of the subject's maturational status.

RESULTS

Frequency distributions of the scores of all subjects were made for all the TAT variables. Each distribution was then dichotomized at the point which most nearly enabled the placing of half of the 33 subjects above, and half of them below, the dividing point. Subjects having scores above this point were considered high in this particular variable; those with scores below this point were considered low in this variable. Chi square tests were used to test the seven propositions, i.e., to ascertain whether or not high scores in certain TAT variables were in fact more characteristic of one group (late- or early-maturers) than of the other.

Table 1 lists the TAT variables, the number of late- and early-maturers with high scores in the variable, the chi square value obtained and the level of significance. It should be noted that the hypotheses tested were one-sided hypotheses, while the chi square value is in terms of a two-sided hypothesis. When chi square has only one degree of freedom, the square root of chi square has a distribution which is the right hand half of a normal distribution. In order to test a one-sided hypothesis, the chi square test must be converted into the equivalent value in terms of a unit normal deviate (2). The levels of significance reported in Table 1 were evaluated in these terms.

Table 1 shows that, as had been predicted, more late-maturing than early-maturing boys revealed feelings of inadequacy and negative self-concepts, i.e., scored high in the TAT variable *negative characteristics*. Hence proposition 1 was confirmed. This finding is consistent with the frequently made clinical observation that retardation in physical maturation may be an important source of personal maladjustment and attitudes of inferiority.

Proposition 2 stated that more late-maturers regard their parents as highly dominating and rejecting. The evidence summarized in Table 1 substantially supported this proposition. While the difference was not statistically significant, more late- than early-maturers scored high in *p Dominance by parents* (total). There was a marked difference between the groups in the variable which involves parental domination by forcing

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[3] We are indebted to Dr. Virginia B. Ware for her participation in this aspect of the study.

TABLE 1

NUMBER OF EARLY- AND LATE-MATURERS SCORING HIGH IN TAT VARIABLES

TAT Variable	*Definition of Variable*	*High Early-Maturers*	*High Late-Maturers*	*Chi Square Value*	*p*
Proposition 1					
Negative Characteristics . . .	H is described in negative terms (e.g., imbecile, weakling, fanatic)	5	13	6.80	<.01
Proposition 2					
p Dominance 1 . .	H forced by parents to do something he doesn't want to	4	8	1.73	.09
p Dominance 2 . .	H prevented by parents from doing something he wants to	6	8	.31	>.30
p Dominance 3 . .	Total instances of H's being forced by parents to do something and/or prevented from doing something	7	11	1.46	.11
p Rejection	H rejected, scorned, or disapproved of by parents or authorities	5	11	3.69	.03
Proposition 3					
n Aggression 1 . .	H is aggressive in physical, asocial way	8	3	3.88	.02
n Aggression 2 . .	H is mad at someone, argues	7	4	1.52	.10
n Aggression 3 . .	Total of all H's aggressive actions	11	8	1.26	.10
n Autonomy 1 . .	H leaves home	7	10	.75	.20
n Autonomy 2 . .	H disobeys or defies parents	7	11	1.46	.11
n Autonomy 3 . .	Total of instances in which hero leaves and/or defies his parents	3	9	4.16	.02
Proposition 4					
n Affiliation 1 . . .	H establishes good relations with his parents	8	8	.00	>.50
n Affiliation 2 . . .	H falls in love, has a romance, marries	9	14	2.66	.05
n Affiliation 3 . . .	Total instances in which H establishes and/or maintains friendly relations	8	12	1.46	.11
Proposition 5					
n Succorance	H feels helpless, seeks aid or sympathy	7	12	2.43	.06
p Nurturance 1 . .	H is helped, encouraged, or given something by parents	5	8	.93	.18
p Nurturance 2 . .	H is helped, encouraged, or given something by someone else (not parents)	8	14	3.88	.02
Proposition 6					
n Achievement . .	H attempts to attain a high goal or to do something creditable	9	10	.02	>.50
n Recognition . . .	H seeks fame and/or high prestige status	9	8	.28	>.30
Proposition 7					
Denial of Feeling .	S states that picture elicits no thoughts or feelings	9	5	2.43	.06

the child to do something he does not want to do (*p Dominance by parents, forcing*). However, examination of the data with respect to the variable *p Dominance by parents (prevention)* makes it necessary to reject that part of the proposition which maintains that late-maturers are more likely to view their parents as highly restrictive of their activities.

That aspect of proposition 2 which deals with feelings of rejection was confirmed by our data. Compared with the early-maturing group, a significantly greater proportion of the late-maturers told stories in which the hero was rejected by parents or authority figures. These feelings of rejection may stem from different sources. In some cases, the parents' behavior may make it clear that they are disappointed in their physically retarded son whom they regard as immature. The boy, perceiving this attitude, may interpret it as rejection. In other cases, parental reluctance to allow the late-maturing boy to establish his independence may lead to considerable tension in the family and the boy's feelings of rejection may simply reflect the ongoing parent-child conflict.

It is possible that earlier in their teens, soon after the physical changes of adolescence became apparent, many of the early-maturing boys also experienced conflicts with their parents, arising from difficulties in establishing their independence or in handling emerging heterosexual interests. At that time they too may have felt dominated or rejected. However, by the age of 17, when these data were collected, these boys were ordinarily treated as adults and granted more freedom. Hence, they were more likely to have resolved many of their conflicts with their parents and to feel accepted and independent.

The hypothesis (part of proposition 3) that more late-maturers would be highly aggressive was rejected on the basis of the evidence given in Table 1. In fact, the differences between the two groups on all the TAT aggression variables were in the opposite direction from the prediction. High scores in the variables relating to aggression of the most overt and violent type were significantly more frequent among the early-maturers, and more members of this group also scored high in measures of milder (verbal) aggression and of total aggression. While late-maturers may experience more problems of adjustment and greater frustrations than their early-maturing peers, they apparently do not manifest greater aggressive motivation. It may be that their own feelings of inadequacy or fears of retaliation and punishment for aggression inhibit their expression of hostile feelings, even in fantasy. On the other hand, the early-maturers who feel more secure personally, and recognize their own relatively advantageous physical and social status, may feel freer to express their aggressive needs. Since aggression is a culturally stereotyped masculine trait, it seems possible that the physically accelerated, being accepted as mature and identifying readily with adult males, are more likely to acquire this characteristic. In any case, the finding that early-maturers express higher aggressive motivation during late adolescence seems consistent with Jones' finding that, as young adults, they score high on the dominance scale of the Edwards Personal Preference test (6). Perhaps the relatively strong aggressive motivation of the early-maturer, or the mature sex-role identification it may imply, serves as a basis for the development of later qualities of leadership and persuasiveness (7).

As Table 1 indicates, the other aspect of proposition 3 was confirmed: a significantly greater proportion of late- than of early-maturers displayed strong motivations to escape from, or defy, their parents. These may be essentially aggressive reactions, stemming from feelings of parental domination and rejection, or they may reflect the late-maturers' awareness of their strife with their parents whom they perceive as blocking their drives for independence. These strong needs for escape and defiance may also be considered evidence of a generally immature way of handling parent-child conflicts. Perhaps, by the age of 17, the early-maturers have already resolved many of their conflicts with their families and/or have learned to handle these in less rebellious and in more direct and mature ways.

Proposition 4 stated that, compared with their early-maturing peers, more late-maturers would manifest strong needs for establishing close social contacts with others. While there was some confirmatory evidence, the results were not clear-cut. When all affiliative needs were considered together (score for *n Affiliation—total*), the group differences were in the predicted direction, but not statistically significant. Examination of the protocols revealed that almost all instances of affiliation concerned either parents or the opposite sex; there were very few stories involving close, friendly associations between like-sexed peers. The two major types of affiliation were scored separately. As Table 1 shows, late-maturers did not differ from early-maturers with respect to need for affiliation with parents, but a significantly greater proportion of the former group displayed strong motivation for heterosexual affiliation.

In view of the late-maturers' strong feelings of inadequacy and dependent needs (see below), it is surprising that a greater proportion of this group did not exhibit strong needs to establish and maintain close bonds with their parents. This may be due to the late-maturers' more intense conflicts with their parents at this age (17 years), their fears of being rejected and dominated by them, and their generally defiant attitudes which prevent them from admitting, even in fantasy, their strong underlying needs to form close contacts with them.

The significant difference between the groups in *n Affiliation* (*love, romance, marriage*) is subject to several possible interpretations. For one thing, this category may refer to general needs to establish close relations with others (with peers or adults other than parents) and not merely to desire for contact with the opposite sex. The set of stimulus cards may not have been adequate to elicit responses indicative of more general affiliative needs; hence, these were expressed through responses in the heterosexual affiliation category. If this is true, proposition 4 was confirmed, and the late-maturers' high scores in this variable indicate their greater general interest in establishing and maintaining friendly relationships.

It is also possible that the late-maturers' strong affiliative needs are actually directed only toward members of the opposite sex, i.e., that *n Affiliation* (*love, romance, marriage*) measures specifically heterosexual interests. Assuming that this is true, there is another plausible explanation for the discovered difference. As we saw earlier, the late-maturer may be afraid to admit that he desires close associations with his parents. He may also feel that his immaturity and poor reputational status prevent him from establishing successful social relationships with like-sexed peers. Hence, he may "displace" his affiliative needs to members of the opposite sex, who, in his fantasies, may seem more responsive.

A third possible explanation of the difference is based on Jones and Bayley's findings that the late-maturers show less overt interest in girls and are regarded as less good-looking (8). From these data, it may be inferred that the physically retarded probably do not have successful and rewarding experiences with girls. Hence their heightened need for affiliation with the opposite sex, expressed in the TAT, may reflect their attempts to satisfy in fantasy needs which they cannot satisfy adequately in reality.

The data were generally supportive of proposition 5 which stated that late-maturers are likely to have strong underlying dependent needs. A higher proportion of this group than of their early-maturing peers scored high in *n Succorance,* the difference between the two groups approaching statistical significance ($p = .06$). Furthermore, high scores in the category involving receiving help and support from others (not including parents) (*p Nurturance—non-parents*)—an indirect measure of dependent needs—were significantly more characteristic of the physically retarded than of the physically accelerated. In view of the late-maturers' attitudes toward their parents, discussed above, it is not surprising to find that perceptions of parents as kindly and supportive (high scores in *p Nurturance-parents*) were not significantly more common in this group than in the early-maturing group.

On the basis of the data involving the TAT variables *n Achievement* and *n Recognition,* we rejected proposition 6 which stated that more early-maturers would be self-confident and have high needs for achievement and personal recognition. In our culture there is strong pressure to develop needs for achievement and personal recognition, and, according to our results, these needs and feelings may become intense regardless of—or perhaps in spite of—the child's maturational status, feelings of personal adequacy, dependency, and adjustment to parents.

Two interesting incidental findings from the TAT data seem to be consistent with the proposition that more early- than late-maturers are likely to be self-confident. Seven boys in this sample of 33 adolescents told stories in which the hero was helpful or kind to someone else (*n Nurturance*). Of this group, six were early-maturers, while only one was a late maturer

($\chi^2 = 2.09$, $p = .07$). Insofar as *n Nurturance* may be a measure of the storyteller's own feelings that he can accept an active, mature role, more of the accelerated group feel self-assured with respect to having attained mature status.

The other incidental finding which seems to support proposition [illegible] is based on responses only to card 1 of the Murray series which depicts a young boy contemplating a violin which rests on a table in front of him. Eight of the subjects spoke of the boy (the hero) as a prodigy or a genius. Of these, seven were early-maturers; only one was physically retarded ($\chi^2 = 5.25$, $p = .01$). If the attribution of this prestige status and accomplishment to the hero reflects the subject's own feeling that he has been an achiever, it follows that more of the physically accelerated have positive self-concepts. In view of the small number of cases involved, both of these findings must be considered tentative, but they do offer some evidence in support of proposition 6.

Proposition 7, which stated that relatively few of the physically retarded boys are unwilling or unable to face their own feelings and emotions, received some support from the TAT data summarized in Table 1. A smaller proportion of the members of this group than of the physically accelerated group specifically denied that the pictures evoked any feelings or emotions (e.g. "It doesn't make me think of anything"). While this variable may not adequately measure *denial of feeling* as a major defense mechanism, this result seems to indicate that late-maturers are more sensitive to their own feelings and more ready to admit and face them openly. Since these qualities are basic to the development of psychological insight, it may be inferred that late-maturers, as a group, are more likely to become insightful individuals.

DISCUSSION

The results of the study support the general hypothesis that, in our culture, the boy whose physical development is retarded is exposed to a sociopsychological environment which may have adverse effects on his personality development. Apparently, being in a disadvantageous competitive position in athletic activities, as well as being regarded and treated as immature by others, may lead to negative self-conceptions, heightened feelings of rejection by others, prolonged dependent needs, and rebellious attitudes toward parents. Hence, the physically retarded boy is more likely than his early-maturing peer to be personally and socially maladjusted during late adolescence. Moreover, some of his attitudes are likely to interfere with the process of identification with his parents, which is generally based on perceptions of them as warm and accepting (9). This, in turn, may inhibit or delay the acquisition of mature characteristics and attitudes which are ordinarily established through identification with parents. Fortunately for the late-maturers' subsequent adjustments, they seem more willing and able to face their feelings and emotions. This may be a result of their awareness of others' attitudes toward their immaturity or their feelings of personal inadequacy and dependency.

The physically accelerated boys, on the other hand, are likely to experience environmental circumstances which are much more conducive to good psychological adjustment. Hence, their psychological picture, as reflected in their TAT stories, is much more favorable. By the time they were 17, relatively few early-maturers habored strong feelings of inadequacy, perceived themselves as rejected or dominated by parents or authorities, or felt rebellious toward their families. As a group, they appeared to have acquired more self-confidence and had probably made stronger identifications with mature adults. Hence, they perceived themselves as more mature individuals, less dependent and in need of help, and more capable of playing an adult male role in interpersonal relationships.

These findings assume additional, probably greater, importance when they are considered in the light of Jones' findings on the early adult (age 33) adjustments of boys who had been retarded or accelerated in physical maturing (6). It should be recalled that by this age physical differences between the two groups had practically disappeared. Certain important psychological differences were noted, however, and these were consistent with the differences at age 17, reported in the present study. For example, the responses of the early-maturing group to two paper-and-pencil tests revealed that, as young adults, they were more dominant, more able to make a good impression and more likely to be turned to for advice and reassurance; more self-controlled; and more willing and able to carry social responsibility. In short, they present a general picture of psychological maturity. Moreover, more of the early-maturers seemed to have made successful vocational adjustments. In contrast to this, when the late-maturers became adults, they tended to be highly dependent individuals who could be described, on the basis of their test responses, as tending to be rebellious, touchy, impulsive, self-indulgent, and insightful. Most of these characteristics are indicative of poor adjustment and psychological immaturity. Fewer members of this group had made good vocational adjustments.

The striking correspondence between the two descriptions of the groups, derived from different kinds of tests and collected at widely separated periods of time, lends further support to Jones' conclusion that "the adolescent handicaps and advantages associated with late- or early-maturing appear to carry over into adulthood to some extent" (6). It seems clear that many attributes of adolescent personality (patterns of motivation, self-conceptions, and attitudes toward others) characteristic of late- and early-maturing boys are relatively stable and durable rather than situational and transitory. This may be attributable to the fact that in our culture adolescence is generally a critical and difficult period of adjustment. Within a relatively brief interval of time, the child must work out numerous complex and vitally important personal problems—e.g., adaptation to his changed biological and social status, establishment of independence, vocational adjustment. In dealing with these problems, he may acquire new behaviors and personality attributes which have broad ramifications, not only on his current adjustment, but also on his subsequent development. If the adolescent can cope with his problems without too much inner stress and turmoil, his self-esteem, feelings of adequacy, and consequently his subsequent adjustment, are likely to be enhanced. On the other hand, if his problems induce great tension and anxiety, he is likely to feel frustrated and inadequate, and, if these feelings are maintained, to adjust less satisfactorily as an adult.

Obviously, the adolescent's success or failure, as well as ease or tension, in handling his problems will be determined to a large degree by the sociopsychological forces to which he is subjected during this time, and these, as we have seen, may be significantly related to his rate of maturation. Thus, physical status during adolescence—mediated through the sociopsychological environment—may exert profound and lasting influences on personality. For this reason, many aspects of the adult's behavior and personality seem consistent with his adolescent adjustments, attitudes and motivations.

Insofar as our results permit generalization, they suggest that some important aspects of motivation, such as needs for achievement and personal recognition, are not significantly affected by maturational status. It may be that among subjects whose achievements are strongly encouraged and rewarded from very early childhood, the need to achieve becomes powerful and resistant to change even in the face of feelings of helplessness and inadequacy. The latter may inhibit the achievement-oriented overt behavior of some late-maturers, but the underlying motivation to achieve seems as strong in this group as it is among the physically accelerated.

In conclusion, it should be noted that, although rate of maturing and associated factors may affect personality development, the relationship between physical status and psychological characteristics is by no means simple. A vast number of complex, interacting factors, including rate of maturation, determine each adolescent's unique personality structure. Hence, in any specific instance, the *group* findings of the present study may not be directly applicable, for other physical, psychological, or social factors may attenuate the effects of late- or early-maturing. For example, an adolescent boy who is fundamentally secure and has warm, accepting parents and generally rewarding social relationships may not develop strong feelings of inadequacy even if he matures slowly. Analogously, the early-maturing boy who has deep feelings of insecurity, for whatever reasons, will probably not gain self-confidence simply because he matures early. In summary, in understanding any individual case, generalizations based on the data of the present study must be particularized in the light of the individual's past history and present circumstances.

SUMMARY

The present investigation was designed to test seven propositions concerning the relationship between rate of physical maturation and important aspects of personality structure, specifically, self-conceptions, underlying motivations, and basic interpersonal attitudes. The TAT protocols of 33 seventeen-year-old boys—16 who had been consistently physically accelerated throughout adolescence and 17 who had been consistently retarded—were analyzed according to a scoring schema involving 20 needs, press, and descriptive categories. The scores of early- and late-maturers in each of the categories were compared.

An earlier study (8) demonstrated that late-maturing boys are more likely than their early-maturing peers to encounter a generally unfavorable sociopsychological environment. Analysis of the data of the present study indicates that this situation may have adverse effects on the personalities of the physically retarded. These boys are more likely to have negative self-conceptions, feelings of inadequacy, strong feelings of being rejected and dominated, prolonged dependency needs, and rebellious attitudes toward parents. In contrast, the early-maturing boys present a much more favorable psychological picture during adolescence. Relatively few of them felt inadequate, rejected, dominated, or rebellious toward their families. More of them appeared to be self-confident, independent, and capable of playing an adult role in interpersonal relationships. Early- and late-maturing groups did not differ significantly from each other in needs for achievement or personal recognition.

These findings make it clear that rate of physical maturing may affect personality development in crucially important ways. However, it is important to note that in any particular case the effects of early- or late-maturing may be significantly modified by the individual's psychological history and present circumstances.

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CONSISTENCY AND CHANGE IN ASCENDANCE-SUBMISSION IN THE SOCIAL INTERACTION OF CHILDREN[1]

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How consistent are behavior patterns throughout childhood? What aspects of behavior are related to maturation and learning and therefore change as the child grows older? What aspects that reflect personality tendencies remain consistently part of the picture of the individual through a 10-year period of development?

An attempt to elucidate these questions of consistency and change in behavior patterns, through an analysis of data from behavior check lists (Personality Rating Scales) developed some quarter century ago at The Merrill-Palmer School, will be made in this article and others to follow.

The original purpose of these check lists (6) was to provide a means of recording the behavior of individual children in the Merrill-Palmer nursery school and recreational clubs.[2] Various aspects of the children's development were being reported and recorded regularly, but there was a tendency for teachers and club leaders to select unusual behavior and outstanding incidents for report, and to let the daily, regular, accepted behavior go unrecorded. Again, the behavior of some children was being reported frequently, that of others rarely or not at all. Various devices had been tried to provide better records of behavior, including the assignment of a stenographer to take daily dictation from teachers and club leaders, but the habit of selecting interesting incidents was set, and the material collected was therefore unsatisfactory for developmental records.

In constructing check lists to remedy this situation, hundreds of descriptive statements about children's behavior were collected from many sources. These statements were classified into nine major categories, and scoring values for statements in each category were established by the Thurstone (8) method. The nine schedules thus developed were reported by Roberts and Ball (6) in 1938. These check lists, filled in for each child at specific intervals, became part of the longitudinal records, and provide

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[1] The authors wish to acknowledge with thanks the help of Merrill-Palmer staff members, Dr. Melvyn J. Baer, who drew the figures in final form, and Dorothy L. Tyler, Editor of Publications, who gave invaluable assistance in preparation of the manuscript.

[2] The Recreational Clubs, organized in 1929 as a service continuous with the Nursery School for children aged 5 to about 15, provided student experience with school-age children and also longitudinal records and educational and research material for the staff. Each club met weekly for a late afternoon program under staff-student supervision.

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the basic materials for the present study, based on the ascendance-submission schedule.

ASCENDANCE-SUBMISSION IN HUMAN INTERACTION

The ascendance-submission variable in human interaction is usually treated as a unitary dimension. In any given interactional situation, at any particular moment, an individual is in varying degrees either ascendant or submissive. At another moment the roles may change, the formerly submissive one now assuming the dominant role, in the sense that attention is now upon what he is saying or doing. In a more enduring sense, however, some individuals are generally less inclined than others to assume the dominant role. Thus, it is not difficult to think of specific individuals as characteristically inclined to be less ascendant than others, and thus to occupy a particular position on a continuum from extreme ascendance to extreme submissiveness.

However, the quality of such behavior also presents important questions. In recent literature a distinction has been drawn, on the one hand, between what in the adult is characterized by Maslow (4) as a need to "seek power as a means to unconscious ends," resulting in behavior in relation to others regarded as "socially obnoxious," and characteristic of "the authoritarian personality," as described by Adorno and others (1); and, on the other, the sort of interactive behavior that develops in face-to-face relationships usually referred to as "ascendance-submission" (3).

The problem of distinguishing between different qualities of ascendant behavior in children has received considerable attention from Mummery (5), who devised a method of evaluating such behavior in terms of "social acceptability."

QUESTIONS CONSIDERED

In the present study we are concerned with the following specific questions regarding the interactive behavior of children through a 10-year period of development: What qualitatively different kinds of behavior were involved in the social interaction of children, as described by the 30 items of the ascendance-submission (A-S) schedule? To what extent is it possible to classify individual children in terms of particular qualitative types or patterns of interactive behavior, as displayed in the nursery school and clubs situations? What changes took place in the actual amount of A-S behavior during the period studied? Did these children as a group become more ascendant as they grew older? Were there changes in the quality of their ascendant behavior?

SUBJECTS AND MATERIALS

The records of 60 children were selected for study on the basis of the amount of relevant material filed for them. Checkings for these 60 subjects on 30 A-S items (Table 1) are the data analyzed in this report. Schedules were checked for many subjects over a period of 10 years or more, from age 2 or 3 to age 13+. For others, schedules were checked over varying lengths of time within the 10-year period. For six children, schedules were checked 30 times or more; for two, only 8 times; the median number per subject was 18.

Table 2 shows the number of children checked at each of the 13 age levels and the total number of check lists available for each age level.

TABLE 1

ASCENDANCE-SUBMISSION CHECK LIST*

1. Submits to any child who takes the initiative.
2. Even submits to younger children.
3. Dominates children more mature than himself.
4. Submits to a leader only after a struggle to dominate.
5. Usually leads a small group.
6. Decides who shall participate in the group activities.
7. Is a leader in any group.
8. Directs all activity about him.
9. Neither leads nor follows; plays alone.
10. Other children make many appeals to him for information.
11. Dominates other children through his ability to talk effectively.
12. Other children appeal to him to make decisions for the group.
13. Dominates other children through their love or admiration for him.
14. Dominates other children through his wealth of ideas.
15. Definitely schemes to get others to carry out his plans.
16. Gives commands with an air of finality.
17. Helpless unless someone organizes activity for him.
18. Hesitates to initiate activity.
19. Hesitates to make suggestions to other children.
20. Usually follows the idea of others for activity.
21. Can take the initiative if it is absolutely necessary.
22. Usually takes the initiative.
23. Seeks the approval of the leader before he acts.
24. Does not push the issue in case of opposition.
25. Stands aside to let others participate.
26. Fights for his place as leader.
27. Opposition spurs him on to greater activity.
28. Insists that other children do as he wishes.
29. Does not defend his own rights with other children.
30. Gets willing cooperation easily.

* The 48 statements of the original A-S scale (6) are here reduced to 30, with 18 statements, found to be nondiscriminative, omitted. As here presented, the A-S scale provides the first step in a projected revision of the nine original "Personality Rating Scales."

QUALITATIVE ANALYSIS OF A-S ITEMS

An examination of A-S items reveals that they describe and involve qualitatively different behavior. For example: to say that a child "insists that other children do as he wishes" would seem to refer to behavior of quite a different quality from that implied when we say, "Other children

TABLE 2

NUMBER OF CHILDREN AND A-S SCHEDULES STUDIED AT EACH AGE LEVEL

Age	*Children*	*A-S Schedules*
3 and under	27	139
3-1 to 3-6	30	102
3-7 to 4-0	33	143
4-1 to 4-6	40	146
4-7 to 5-0	42	157
5-1 to 6-0	32	74
6-1 to 7-0	25	66
7-1 to 8-0	34	72
8-1 to 9-0	28	56
9-1 to 10-0	18	38
10-1 to 11-0	15	25
11-1 to 12-0	12	28
12-1 and over	20	51

make many appeals to him for information." Both statements have high scoring values in the original A-S scale.

Accordingly, it seemed important first of all to identify and perhaps to deal differentially with any qualitatively different variables in the schedule. A careful preliminary sorting of the 30 items led to six tentative groupings of A-S items, numbered as in the revised check list (see Table 1), as follows:

A-S Items: Six Groupings

I. Domination (bossiness)—ascendant behavior with definite tendencies toward use of force or coercion.
  4. Submits to a leader only after a struggle to dominate.
  8. Directs all activities about him.
  15. Definitely schemes to get others to carry out his plans.
  16. Gives commands with an air of finality.
  26. Fights for his place as a leader.
  27. Opposition spurs him on to greater activity.
  28. Insists that other children do as he wishes.

II. Natural Leadership—ascendant over other children because of personal resourcefulness and attractiveness.
  10. Other children make many appeals to him for information.
  12. Other children appeal to him to make decisions for the group.
  13. Dominates others through their love or admiration for him.
  14. Dominates other children through his wealth of ideas.
  30. Gets willing cooperation easily.

III. Ascendance—behavior which might relate to either authoritarian "domination" or "natural leadership" patterns.
  3. Dominates children more mature than himself.
  5. Usually leads a small group.

6. Decides who shall participate in the group activities.
7. Is a leader in any group.
11. Dominates other children through his ability to talk effectively.
22. Usually takes the initiative.

IV. Timid Conforming Behavior—related to politeness and a need to please others.

18. Hesitates to initiate activity.
19. Hesitates to make suggestions to other children.
23. Seeks approval of the leader before he acts.
24. Does not push the issue when opposed.

V. Dependent Submissiveness—behavior related to ineffectiveness and immaturity.

1. Submits to any child who takes the initiative.
2. Even submits to younger children.
17. Helpless unless someone organizes activity for him.
20. Usually follows the ideas of others for activity.
29. Does not defend his own rights with other children.

VI. Individualistic Tendency—withdrawal, not necessarily related to either ascendance or submissiveness.

9. Neither leads nor follows; plays alone.
21. Can take the initiative if it is absolutely necessary.
25. Stands aside to let others participate.

FACTORS AS BEHAVIOR PATTERNS

An important question in relation to these six groupings, arrived at on a purely judgmental basis, is whether, among our 60 subjects, there actually are "behavior types" whose interactive behavior in peer relationships can be characterized and differentiated in terms of these or other groupings of statements.

An answer to this question, using Thurstone's centroid method, was sought in the results of a factor analysis of check-list material, including the 30 A-S items of the present study. Instead of the more common procedure of analyzing a table of intercorrelations among the check-list items for the 60 subjects, intercorrelations among children were analyzed[3] for the first 15 subjects on the list of 60 (arranged in random order). Thus in this instance the check-list items, rather than the 15 subjects, constituted the sample. It seemed important, however, to have a more adequate sample of behavior on which to base our interindividual correlations than was provided by the 30 A-S items. Since two other schedules in the series of nine, i.e., "Independence of Adult Affection and Attention" and "Response to

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[3] In such an analysis each rotated factor is interpreted in terms of specific children (those with high factor loadings) and the behavior patterns checked for them. Since we sought children who represented "behavior types," this Q-type analysis seemed more appropriate than the usual R-type. The inter-individual correlations were expressed as tetrachoric coefficients, computed by means of Thurstone's (9) computing diagrams. In setting up the tetrachoric tables, the requirement of Stephenson (7), that in this type of analysis the mean "scores" on each item must be equalized for all individuals, was met by using a procedure proposed by Holley and reported by Guilford (2).

Authority," were also concerned with interactive tendencies and relationships, the items from these two were added, thus providing a sample of 109 items.

The analysis was carried through eight factors. "Simple structure" was approximated by means of orthogonal rotations, two axes at a time (2, p. 501). From the rotated factor matrix, the children with high factor loadings were singled out. The characteristic[4] A-S behavior pattern of each of these children was then examined, and an attempt was made to interpret each factor in terms of these patterns.

Since less than a third of the items involved in the analysis were A-S items, it is significant that three of the eight factor patterns were found to correspond fairly closely to our logically differentiated A-S behavior item groupings. The most clearly identified was item grouping I, Domination (bossiness); four of the seven items of this grouping formed the core of one factor pattern, which at the time of analysis was interpreted as "domineering in peer relations, with tendencies to 'strong arm' exploitiveness—also tried to domineer in his relationships with adults."

A second factor pattern furnished some validation of our item grouping IV, Timid Conforming Behavior. A child with a significant negative loading in this factor was described, in terms of the items that characterized him, as submitting to any child who takes the initiative, hesitating to make suggestions, following the ideas of others, and standing aside to let others participate. The positive aspect of this factor, on the other hand, describes the child who takes initiative yet does not force his will on others, but, rather, recognizes the rights of others—qualities important in democratic leadership.

Item grouping V, Dependent Submissiveness, also received support from the factor analysis. Children with high loadings in this factor were characterized by such items as helpless unless someone organized activity for him, submits to any child who takes the initiative, and even submits to younger children.

A finding not related to any of the item groupings is worth noting. Most of the items that characterized the two individuals with the highest factor loadings were distributed among the three ascendance groupings (I, II, and III). Some, however, were found in IV, Timid Conforming Behavior. In general, the factor pattern appears to represent a moderate generalized ascendant tendency, perhaps with Natural Leadership (I) as its strongest component, but also with a tendency toward respect for and consideration of others.

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[4] Arbitrary criteria were adopted for selecting items characteristic of a child's A-S behavior on the basis of the over-all frequency of item checkings for the group as a whole, as well as the frequency for the child concerned. For a very "unpopular" item to be checked at all for a child has significance. For any description to be taken as characteristic of a child, a maximum individual frequency of 25 per cent was set arbitrarily for the most "unpopular" items; for the most popular items, 50 per cent.

The remaining factors also represent children whose patterns of frequently checked items do not correspond to any one of the six groupings, but tend to cut across several or all of them. They typify the sort of check-list pattern to be expected for young children. Few children are likely to be consistently "domineering" or "dependent" or "timid" in all situations, or to display uniformly the qualities of "natural leadership." More typically they would be inclined to show these qualities over a period of months or years, and, in varying degrees, in interaction with peers.

However, the factor analysis, involving a sample of the subjects and including, among others, the A-S items, provided some evidence that certain "behavior types" in terms of ascendance and submission may be identified among children. Certain factors represented children whose characteristic behavior corresponded fairly closely with our judgmental groupings of the A-S items, while certain other factors represented children whose behavior cut across several or all six item groupings. That is, certain children, as revealed in patterns of behavior items designated as characteristic of them, were quite variable, exhibiting leadership qualities or dominating behavior in certain situations or with certain children, then being quite submissive or retiring with other children or in other situations. Thus, they adapted their behavior to the realities of the moment. Indeed, the behavior of such children was quite consistent with the exigencies of their ever changing social environment, though not in the sense of a definite pattern of behavior always characteristic of the individual child.

DEVELOPMENTAL CHANGES IN A-S BEHAVIOR

Since social behavior is a matter of development, in terms of both maturation and learning from social experience, young children, even when they are together in a group, are not likely to interact in any way as frequently as older children. One expectation in the present study, therefore, was that behavior describable as either ascendant or submissive would be observed more frequently in children as they passed the 3-and-under age level.

Quantitative Changes in A-S Behavior

Table 3 shows, for each of the 13 age levels, the number of A-S sheets studied, the total number of items checked, the mean number of items per sheet checked, and the percentage of total items checked. For the 3-and-under level there were 139 sheets, with 424 checks, a mean of only 3.1 items per sheet and only 10 per cent of the possible 4,170 checks. For age levels 3-1 to 3-6 and 3-7 to 4-0, a mean number of 5 items per sheet were checked, amounting to 16 and 17 per cent of the possible checks. The percentage differences between these older levels and the 3-and-under level are significant statistically well beyond the 1 per cent level of confidence. Also showing a significant increase in the proportion of items checked, age levels 4-1 to 4-6 and 4-7 to 5-0 have each a mean number of 6.1 items per sheet checked, or 20 per cent of the possible checks. The difference between these age levels and the two preceding is again significant beyond the 1 per cent level.

TABLE 3

NUMBER OF A-S SHEETS, NUMBER OF CHECKED ITEMS, MEAN NUMBER OF CHECKS PER SHEET, AND PERCENTAGE OF ITEMS CHECKED AT EACH OF 13 AGE LEVELS

Age Level	A-S SHEETS	ITEMS CHECKED		
	Total	*Total*	*Mean/Sheet*	*Percentage*
3 and under	139	424	3.1	10
3-1 to 3-6	102	499	4.9	16
3-7 to 4-0	143	717	5.0	17
4-1 to 4-6	146	892	6.1	20
4-7 to 5-0	157	959	6.1	20
5-1 to 6-0	74	364	4.9	16
6-1 to 7-0	66	303	4.6	15
7-1 to 8-0	72	363	5.0	17
8-1 to 9-0	56	253	4.5	15
9-1 to 10-0	38	243	6.4	21
10-1 to 11-0	25	138	5.5	18
11-1 to 12-0	28	144	5.1	17
12-1 and over	51	267	5.2	17

These remarkable changes in over-all amount of observed interactive behavior within a period of two years would seem to be the result of two factors, biological maturation and social learning in a highly favorable environment. An organism can function at no higher levels than those for which it is "ready" in terms of biological development. The child of 2½ years ordinarily is not ready for involved social interaction or concerned much with other children and his relationships with them. He has his own private impulses to activity and is likely to resist attempts to interfere with or influence that activity. Again, he is not likely to try to influence the activities of others. For these reasons he is not likely to be checked for A-S behavior in a rating situation. However, he is developing very rapidly in terms of both maturation and social learning. In the stimulating environment of the nursery school where play with peers is the order of the day, patterns of interaction are likely to develop in pace with his organismic readiness. Thus, a peak in average frequency of interactive behavior is soon reached. In our group this peak of A-S activity was reached during the fifth year of life and the children's final year in nursery school. They had achieved "senior" status there. They were thoroughly familiar with the situation and well acquainted with one another. They had learned many social skills and patterns of interaction appropriate to that particular situation.

The club program was quite a different situation for the children. They came only one evening a week and found themselves with some strange clubmates and new leaders. At the same time they were adjusting to the kindergarten situation in the public school. It is not surprising, therefore, that many of their records show a definite decrease in social interaction. Table 3 shows that the average number of checked items per sheet dropped from the peak of 6.1 to 4.9. The corresponding percentage difference is significant at the 1 per cent level. Interestingly, the frequency level of checking remained approximately the same for four years, after which time another peak of A-S behavior occurred. At age level 9-1 to 10-0 the mean number of items checked was 6.4 and the percentage was 21. These values are slightly higher than those for any other level and represent a significant change from the earlier levels. Following this peak, the A-S level declined, but without statistically significant changes. Figure 1 illustrates these variations in observed A-S activity level throughout the 10-year period.

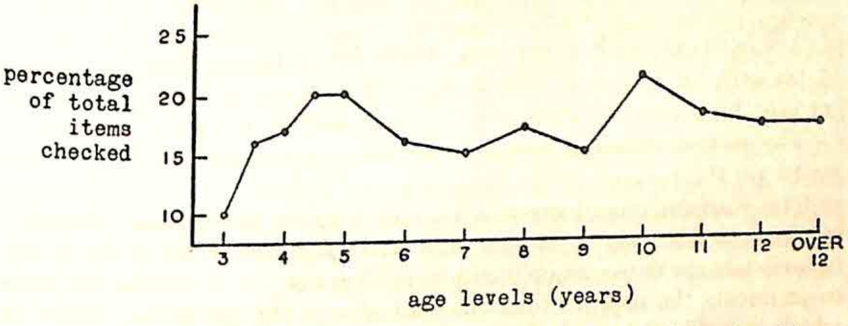

FIGURE 1—Change in amount of A-S behavior in 60 children through a 10-year period, as recorded by nursery school teachers and club leaders.

Changes in Ascendance Level with Age

Was there a tendency for children to become more or less ascendant as they grew older? To answer this question, the 30 scale items were listed in order of scale value of ascendance, from highest to lowest, and divided into three sections of 10 items each; the first section, *a*, contained the items with highest scale value, *b* those in the middle range of scale value, and *c* those describing definitely submissive behavior.

Table 4 shows developmental trends in ascendance in terms of percentages of checks in the three sections for 13 age levels. As expected, at the 3-and-under level children showed a low level of interaction, and thus

TABLE 4

DEVELOPMENTAL TRENDS IN ASCENDANCE:

Percentage and Significance of Difference of High, Middle, and Low Ascendance Items Checked for Each Age Level

Age Level	% POSSIBLE ITEMS CHECKED			DIFFERENCE	
	a	*b*	*c*	*a — c*	*p*
3 and under	4	15	11	—7.0	.01
3-1 to 3-6	14	20	15	—1.0	ns
3-7 to 4-0	14	19	18	—4.0	.01
4-1 to 4-6	24	22	16	8.0	.01
4-7 to 5-0	26	23	12	14.0	.01
5-1 to 6-0	13	23	13	—0.2	ns
6-1 to 7-0	16	20	10	6.0	.01
7-1 to 8.0	14	21	15	—1.0	ns
8-1 to 9-0	11	18	17	—6.0	.01
9-1 to 10-0	21	26	17	4.0	ns
10-1 to 11-0	12	24	19	—7.0	.03
11-1 to 12-0	14	21	16	—2.0	ns
12-1 and over	17	26	9	8.0	.01

of A-S behavior, with 4 per cent checks for section *a*, high ascendancy; 15 per cent for section *b*, middle range—lowest for all age levels; and 11 per cent for section *c*, submissive behavior—among the three lowest.

The picture changed strikingly within a few months' time. For age 3-1 to 3-6 the percentages of checked *a* and *c* statements had risen to 14 and 15, with the ascendance curve continuing generally upward to a peak of 26 per cent at age 4-7 to 5-0. The percentage frequency of submissive behavior for the entire group increased to 18 at age 3-7 to 4-0, then decreased to 12 during the next six months. Thus, during the age period 4-7 to 5-0, which included the child's last term in nursery school, ascendant behavior reached its peak, a picture quite in contrast to their behavior up to age 3.

Between ages 5 and 6, when the children were out of nursery school and in public kindergarten, a second notable change took place. The percentage of checks for sections *b* and *c* remained about the same as for the previous age level, but for section *a* fell from a peak of 26 to 13 per cent. Thus, the A-S aspect of the children's behavior during age 5-1 to 6-0 was very similar to that during age 3-7 to 4-0, with some striking changes taking place in the ages between. From ages 6 to 12 and above, the changes were relatively small. However, a second peak in the A-S curve (Fig. 1) resulted mainly from a relative rise in ascendancy at age 9 to 10. The same age changes, expressed as percentages of total checks at each age level for items in sections *a* (H), *b* (M), and *c* (L), are shown in Figure 2.

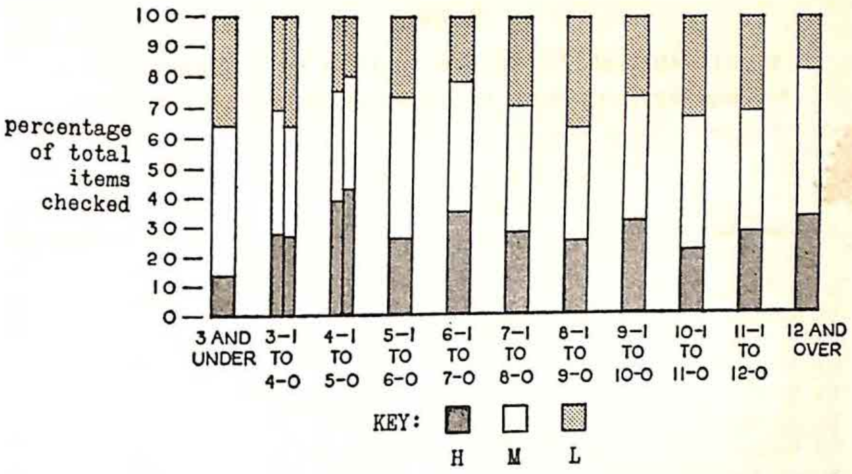

FIGURE 2—Percentages of total checks of items with high (H), medium (M), and low (L) ascendance score values for 13 age levels.

Developmental Changes in Quality of A-S Behavior

As we have shown, behavior patterns approximately equal in degree of ascendance or submission may be quite different in quality. To show these qualitative changes as the children developed, the total percentage frequency of checks for the six qualitative groupings of A-S items was computed for each age level (Table 5).

Findings from other tabulations also appear here. For example, at the 3-and-under level the relative frequencies with which any sort of A-S behavior was observed tended to be low, especially for the categories (I, II, III) describing ascendant behavior. For category VI, individualistic (isolate) behavior, the percentage of 37 for the 3-and-under level was high. As we have seen, at this early age children are inclined neither to lead nor to follow, but to play alone. Up to age three, children seem to have their own individual ideas for activity and are not likely to seek adult approval before going ahead, or to attempt to direct activity or decide who shall participate in it; they are inclined, rather, to stand aside and let others participate in an activity. In general, category VI is most descriptive of children of 3 and under.

Particularly during the three-year period of nursery school attendance, there was a fairly consistent increase in ascendant behavior and a decrease in isolate tendency. Domination (I), for example, increased in percentage frequency from 6 at 3-and-under to 23 at the 4-7 to 5-0 level; for natural leadership (II), the corresponding increase was from 4 to 26 per cent. During the same period the decrease in percentage of individualistic tendency (VI) was from 37 at 3-and-under to 19 at 4-7 to 5-0. Changes in the other three categories (III, IV, and V) were irregular and usually not

TABLE 5

DEVELOPMENTAL CHANGES IN QUALITY OF A-S BEHAVIOR: *Percentage of Items Checked in Six A-S Categories and Combined Catgories*

Age Level	% POSSIBLE ITEMS CHECKED CATEGORY * *I*	*II*	*III*	*IV*	*V*	*VI*	*Combined Categories*
3 and under	6	4	8	12	9	37	10
3-1 to 3-6	16	15	35	19	10	31	16
3-7 to 4-0	15	15	17	21	14	34	17
4-1 to 4-6	24	22	25	16	14	23	20
4-7 to 5-0	23	26	30	15	9	19	20
5-1 to 6-0	16	16	22	17	8	24	16
6-1 to 7-0	18	18	22	14	5	18	15
7-1 to 8-0	17	15	19	19	11	19	17
8-1 to 9-0	17	11	21	16	16	20	15
9-1 to 10-0	17	23	28	26	12	15	21
10-1 to 11-0	17	12	20	23	14	25	18
11-1 to 12-0	18	21	17	19	14	19	17
12-1 and over	23	21	23	13	6	19	17

* Category: I (7 items), domination; II (5 items), natural leadership; III (6 items), ascendance; IV (4 items), timid, conforming; V (5 items), dependent submissiveness; VI (3 items), individualistic. Combined categories, 30 items.

significant. From age 5 to 12 and over, there was again a slight and somewhat inconsistent trend in the direction of greater ascendance (I and II).

To summarize: As a group, our subjects during nursery school attendance became progressively more ascendant and progressively less isolate, but showed no consistent trend of change in frequency of submissive behavior. With the situational change from nursery school to kindergarten and clubs, ascendant behavior was noted less frequently. Though the remainder of the period of study there were no consistent changes in A-S frequency.

SUMMARY AND FINDINGS

This report, the second[5] in a projected series, is concerned with ratings of 60 children on the 30 items of an ascendance-submission (A-S) schedule during varying periods of time over a 10-year interval, while they were attending the Merrill-Palmer Nursery School and Recreation Clubs.

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[5] The first in the series was a paper by Jayaswal and Stott (3). "Ascendance-Submission in the Preschool Child and His Adult Personality," by Sita Ram Jayaswal, a doctor's dissertation (University of Michigan–The Merrill-Palmer School, 1954), also deals with the general subject. The thesis was published in India as *Early Childhood and Adult Personality* (Benares: Nand Kishore & Bros., 1954).

The purposes were: (1) To identify in the 30 items qualitatively different forms or patterns of ascendant or submissive behavior; (2) to determine whether and to what extent the subjects presented individual patterns corresponding to these or other generalized A-S patterns; (3) to note and describe any general age changes and developmental trends in the amount of social interaction related to A-S; (4) to determine specifically whether there was an increase in the tendency to be ascendant with age; and (5) to describe developmental changes in the quality of ascendant behavior in our subjects through the 10-year period.

The 30 A-S items, judged to be descriptive of a number of different qualities of interactive behavior, were arbitrarily classified into six qualitative groupings, as follows: I, Domination (bossiness); II, Natural Leadership; III, Ascendance (behavior which might relate to either domination or natural leadership); IV, Timid, Conforming Behavior; V, Dependent Submissiveness; and VI, Individualistic (isolate) Tendency.

A Q-type factor study was made of 109 check-list items, including the 30 A-S items. This analysis demonstrated that certain of our subjects presented individual patterns of behavior corresponding roughly to certain of our six groupings. Perhaps more significant was the great diversity of individual patterns, some of which tended to be consistent over several years. Thus, a child might show a consistent pattern of domineering or submissive behavior, or of being a natural leader, or even of combined ascendance and submissiveness. Others exhibited no characteristic patterns, but, rather, at different times and in different situations displayed virtually all types of behavior represented in the 30 items, perhaps adapting their behavior to the realities and needs of each situation.

The findings were as follows:

1. Interactive behavior generally, including A-S behavior, was significantly less frequent at the youngest level (3-and-under) than at any other, apparently because of organismic lack of readiness for social interaction, as well as lack of social experience. The percentage frequency of checking doubled (from 10 to 20) during the period of nursery school attendance (up to 5 years of age). At age 5, with the change from nursery school to kindergarten and clubs, the frequency dropped to 16. From this point on to 12+ there was no significant change, except at age 9 to 10, when the frequency was 21.

2. The increase in interactive behavior with peers was largely a change in degree of ascendance. At the youngest level (3-and-under) only 4 per cent of items with the highest ascendance values were checked; from 4-7 to 5-0 the frequency had risen to 26 per cent. Changes in frequency of submissive behavior were generally not significant.

3. No significant change occurred in the relative amounts of three qualities of ascendant behavior described as domineering bossiness, natural leadership, and undifferentiated ascendance. However, a significant devel-

opmental trend (increase) occurred in each, particularly during the nursery school period. At the same time, there was a marked decrease in percentage of individualistic (isolate) behavior (37 to 19).

The authors conclude that readiness of the organism is the first requisite to social interaction in children, but even when thus ready they still must learn to be socially responsive and interactive. The amount as well as the quality of social behavior they develop, whether in terms of positive leadership, domineering exploitiveness, dependent submissiveness, or conformity and compliance with the wishes of others, would seem to depend largely upon environment. In a nursery school situation, with abundant opportunity for social experience, patterns and varieties of interactive behavior develop rapidly.

The factors that dispose a child to develop in a particular direction in relation to ascendance or submissiveness await discovery in further research.

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NUTRITION DURING GROWTH AND DEVELOPMENT[1]

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The study of the growth and development of children is a very complex subject involving knowledge in many disciplines, such as anatomy, physiology, genetics, biochemistry, nutrition, dental medicine, and psychology. Nutrition is one of these disciplines which requires a great deal of attention.

During approximately the first 16 years of life, the child normally achieves full physical stature and develops into an adult. It is during this period that the nutritional needs of the child are constantly changing.

In any discussion of nutrition during growth and development, consideration must be given to the prenatal diet and to its effect on the mother and child. It is now well established that developmental studies of the prenatal period are important and may reveal the answers to many questions concerning the effect of nutrition on the developing tissues of the fetus and on the ultimate soundness and resistance of these tissues to disease.

The nutritional needs of infancy, childhood, and adolescence are no less important. These needs parallel periods of accelerated growth and periods of decelerated growth. During infancy and the early preschool years a child grows rapidly, making his nutritional requirements very high; during the later preschool and school years the rate of growth slackens, and his nutritional needs at this time level off. Then, before puberty certain phases of growth again become accelerated, and the nutritional

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[3] The author wishes to thank Dr. Coenraad F. A. Moorrees of the staff of the Forsyth Dental Infirmary for Children for his valuable advice and criticism in the preparation of this paper. The author also wishes to thank Mrs. Barbara Voss for her able assistance in the editing and preparation of the manuscript, and to Miss Mary-Caroline Collina for the typing of the manuscript.

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needs during this period increase tremendously before they taper off to the adult level. With improper amounts or unbalanced combinations of nutrients during this period of 16 years, there may be disturbances in many parts of the body. Although the incidence of obvious nutritional deficiencies, such as scurvy, rickets, and beri-beri in children has been markedly reduced, many subclinical manifestations of possible nutritional inadequacies, such as extreme fatigue, circles under the eyes and scaliness of the skin of the arms and legs, lesions at the corners of the mouth and crusted eyelids, and other symptoms of poor health are found throughout the child populations.

It is essential to realize that growth and development is a highly individualized process, and that each child will grow in his own unique way, influenced by genetic factors and by environmental factors, such as activity, rest, psychological challenge, opportunity to learn, and security in affection. It is impossible to understand the child physically without understanding him at the same time as a child who thinks and feels. All of this means that the child reacts as a total being, and it is important to have a clear understanding of this fact if the child is to be educated and guided properly.

Within recent years, the tendency to become highly specialized in any given field of science has lessened the importance, to the specialist, of the total individual. It is necessary to remember that no one discipline can perform its function or discharge its responsibility to the individual by divorcing itself from a consideration of the over-all health of that individual. In children this approach assumes tremendous importance during their growth and development, which is a critical period indeed.

PREGNANCY

Prenatal Diet

Although in the earliest part of pregnancy the ovum carries some nutrient material within itself, the unborn child is dependent upon the mother for the major portion of the material needed for its growth and development. Before discussing the prenatal diet of the mother, we must consider her nutritional status before pregnancy. If the mother was poorly nourished prior to pregnancy, then a good diet begun during the pregnancy might have to be utilized by the mother to build up her depleted stores of essential nutrients. This may lessen the availability of these nutrients to the fetus, and might possibly exert a harmful influence on the ultimate health of the infant.

The interrelationship of mother and fetus and the extent of dependence of the fetus upon the maternal diet require more extensive investigation before the role of nutrition in pregnancy can be fully understood. Such studies are being conducted by Stuart and Burke at the Harvard School of Public Health. Mention should be made of some of the results of their investigations.

One study involved 216 maternity patients at the Boston Lying-In Hospital, who were watched closely and examined periodically from the fourth or fifth month of pregnancy to term. Stuart and Burke found that women who had optimum dietaries prior to and during pregnancy, according to the standards established by the United States Food and Nutrition Board of the National Research Council (11), delivered the healthiest babies, and that women who had only fair or very poor dietaries had a higher incidence of premature births, stillbirths, and babies with congenital abnormalities (3). A statistically significant relationship was found to exist between the prenatal dietary rating and the condition of the infant. These results have been substantiated by Cameron and Graham (4) in studies done at the Glasgow Royal Maternity Hospital and Women's Hospital and by the Toveruds (6) in Oslo, Norway.

The relationship between nutrition and congenital malformations has received attention by many investigators. Accumulated evidence indicates that the fetus can no longer be considered a true parasite living at the expense of the mother and that faulty nutrition may affect not only the pregnant woman, but also her fetus, in ways that are not usually considered to be the results of malnutrition (8). Although the studies by Stuart, Burke, and others indicate that most of the infants with congenital malformations were born to women who had had the poorest diets, the number of cases observed was too small to permit final conclusions to be drawn. However, Warkany and others have demonstrated beyond reasonable doubt that certain congenital malformations in animals do result from maternal dietary deficiencies (7). If these findings are even partly applicable to human beings, then it might be futile to correct the maternal diet after the first trimester of pregnancy in an attempt to prevent congenital anomalies.

Dietary Requirements During Pregnancy

The quantity of food need not be increased during the first trimester of pregnancy, except for women who are underweight. During the second and third trimesters of pregnancy, however, the quantities of certain nutrients required by the pregnant woman are increased considerably.

1. The protein intake must be increased because it is specifically needed for growth, and because, as a rule, a diet low in protein is also lacking in other important factors. Under ordinary circumstances a desirable daily allowance of protein is considered to be 1 gm. per kg. of body weight in an adult, but nutritional authorities agree that an increase to 1.5 gm. per kg. of body weight is more desirable to supply the demands made by the growing fetus and by maternal tissue repair in the latter half of pregnancy.

2. The calcium and phosphorus requirements are increased in order to meet the needs of the mother and those of the bony framework of the body of the fetus, as well as for the proper formation of tooth structure. The recommended normal allowance for calcium is 0.8 gm. per day, which

is increased to 1.5 gm. during pregnancy. There are no data for the recommended intake of phosphorus, but it is generally agreed that if the amount of calcium in the diet is adequate, the phosphorus intake will be adequate also.

3. The proper utilization of calcium and phosphorus depends upon the inclusion of a certain amount of Vitamin D; the necessary amount is thought to be 400 International Units daily.

4. An adequate supply of iron is no less important than that of calcium, since the fetus stores iron for its own use during the first months of infancy. The normal daily requirement of iron is 12 mg.; for pregnancy it is raised to 15 mg. daily.

5. Iodine is also an important element in the diet, because a deficiency may cause goiter in the child or in the mother. The requirement for iodine is very small, probably 0.15 mg. to 0.30 mg. daily for the adult. The need is met by the regular use of iodized salt. This is especially important during pregnancy.

6. Undoubtedly there is an increased need for vitamins during pregnancy. Vitamin A is increased from 5000 I.U. per day to 6000 I.U. Since the B complex vitamins—thiamine, riboflavin, niacin, folic acid, pantothenic acid, pyrodoxine, and others recently discovered—are all concerned with metabolic processes, and since metabolism is increased during pregnancy, it is essential that there should be a corresponding increase in the intake of this group of vitamins. The ascorbic acid requirement is greater during the latter part of pregnancy, and the intake is increased from 70 mg. to 100 mg. per day (11).

In spite of the increased intake of important nutrients by the pregnant woman, a corresponding increase in her weight is not necessarily indicated. It is to be expected that most pregnant women will have an average weight gain of about 20 pounds (9 kg.). Most obstetricians prefer to limit the weight gain of their patients to less than 20 pounds if the patients are in good health.

Disturbances Associated with Pregnancy

During pregnancy, there may be nausea and vomiting. The causes of nausea and vomiting have not been established definitely, but studies have shown that they are more likely to occur in women whose diets are inadequate (2).

During the third trimester, the so-called toxemia of pregnancy may occur. The exact causes of this toxemia are still undetermined, but it is felt by some authorities that a true toxemia of pregnancy may be less common when the diet has been adequate throughout the pregnancy. Burke reported that women whose diet was rated as good or excellent did not suffer from toxemia (3). Nausea and toxemia are important factors to consider because they are known to have some effect on the fetus. If attention is given by the pregnant mother to all the nutritional factors discussed, there is no reason why her infant cannot be in optimum health at the time of delivery, barring genetic or medical factors beyond the control of the parents.

In the foregoing discussion emphasis has been placed on one aspect of prenatal nutrition and growth and development. The relationship of nutrition and dental health should also be considered.

Assuming that the teeth and their adjoining tissues are influenced by diet, the quality of the prenatal diet could be a factor which influences the structure of the deciduous and permanent teeth, and this, in turn, could play an important role in the maintenance of dental health once the teeth are exposed to the oral environment (12). Thus, the qualitative development of the dental enamel must be of tremendous significance to dental health. This can only mean that the period of its primary development must be a crucial one. Since the period of its primary development is in utero, and since the material for its development must come from the mother's diet, should we not consider that prevention of dental caries begins with pregnancy? Until now, most of the attempts to control dental caries have been made after the breakdown of the teeth has occurred. Efforts should be made, instead, to promote good dietary practices which may help to ensure the formation of more resistant teeth (12). Prenatal advice concerning the diet alone is not sufficient, since such advice is based usually on the assumption that the mother is in good nutritional status at the beginning of pregnancy, and it is known from dietary surveys of samples of populations that this is seldom so.

A new approach to the problem of tooth decay is the study of the trace elements found in food and teeth. These studies on the effect of trace elements on the integrity of the teeth have received wide attention. Especially impressive is the reported influence of fluorides on dental health. It is quite possible, therefore, that the impact of this recent research on fluorides is only the beginning, the first clue to what may be other significant relationships between trace elements and dental health.

INFANCY AND CHILDHOOD

Breast Feeding versus Artificial Feeding

The mainstay of the infant's diet for the first three months of life is milk in some form or other. There has been considerable discussion of the merits of breast feeding versus artificial feeding. It is true that breast milk is a product of the mother's diet and may, therefore, not be the ideal food in all instances. It is true, also, that breast milk may lack adequate amounts of various vitamins, making supplementation desirable. Yet human milk is the food designed by nature for the human infant, and no one has yet succeeded in producing a formula for infant feeding which can be demonstrated to be an improvement on nature's product (10).

The exigencies of modern living may require that a mother work outside the home, making artificial feeding a necessity. Also some mothers may object to the nursing of their babies because of emotional factors or misconceptions about breast feeding. The time required for proper instruction of mothers and the ease of control offered by the technically well-developed artificial procedures, which apparently obtain good nutritional results in most instances, have made physicians and nurses feel justified in advocating formula feeding in preference to breast feeding (10). It is generally agreed, however, that if they were properly educated, many more mothers could breast feed their infants successfully.

Nutritional Requirements during Infancy and Childhood

Because of the rapidity of the infant's growth during his first year of life, the nutrients required for this period are greater, in proportion to body weight, than at other times of his life. The protein requirement is 2 to 3 gm. per kg. of body weight and is supplied by the milk intake. The calcium and phosphorus requirement is also supplied by the milk intake. The energy requirement, 120 cal. per kg. of body weight per 24 hours, is met by the addition of some sugar product to the formula (11). The ascorbic acid requirement is met by giving the infant orange juice when not breast fed, and the vitamin A and D requirements are met by the administration of some fish liver oil concentrate daily.

There is some difference of opinion among pediatricians as to when supplementary foods should be given. It is generally agreed that solid foods should be started as soon as the infant is able to tolerate them, depending, of course, on the degree of maturity of the gastro-intestinal tract of the child, which varies considerably among infants. Most infants are able to tolerate solid foods by the time they are between three and six months old. By the end of the first year the baby should be eating a variety of foods. From the second to the fourth or fifth year, there should be a gradual introduction of most foods on the well-planned family table.

Food Habits

The requirements of the growing child are very specific; therefore, children are in need of constant guidance and supervision. A great deal of time and effort is required to establish good food habits in children, but the task can be made a little easier if a few fundamental concepts are observed and a little common sense is used. First, the meal hour should be one of peace and quiet. Tension and unpleasantness during the meal will often destroy the child's appetite and the appetites of the parents. Second, the child whose appetite is small will best be served by having one dish at a time placed before him. Children often prefer to take one food at a time rather than to mix them. Third, children are great imitators; they often partake of certain foods simply because their parents do. Therefore, if the dietaries of the parents are good, the dietary of the child will be good. A child who is scolded and made to feel that he is being coerced into eating certain foods is sure not to want them. Finally, if a child is to be offered some unfamiliar food, it should come early in the meal, while he is still hungry, and it should be given in small quantities. It he rejects it, he should not be forced to eat it, but it should be offered to him again a week later. Bribery is always a poor psychological practice, since the child soon learns how to make a mother thoroughly unhappy by expecting bribes for foods that he once ate with relish. The most effective plan is to expect the child to eat the food set before him and for the parents to have good food habits themselves.

At different ages appetite varies a great deal from meal to meal, but this variability tends to diminish with increasing age. Usually, children have a unique way of compensating for their losses and of making them up at another meal. A child's food habits reflect his nutritional needs, the degree of maturity of his body, his personal satisfactions and dissatisfactions, and the impact of the economic and social world upon him (9).

Growth Curves

Weight gain should be fairly consistent, but the rate of gain will vary, depending on the genetic structure of the child, the sex (boys are a little

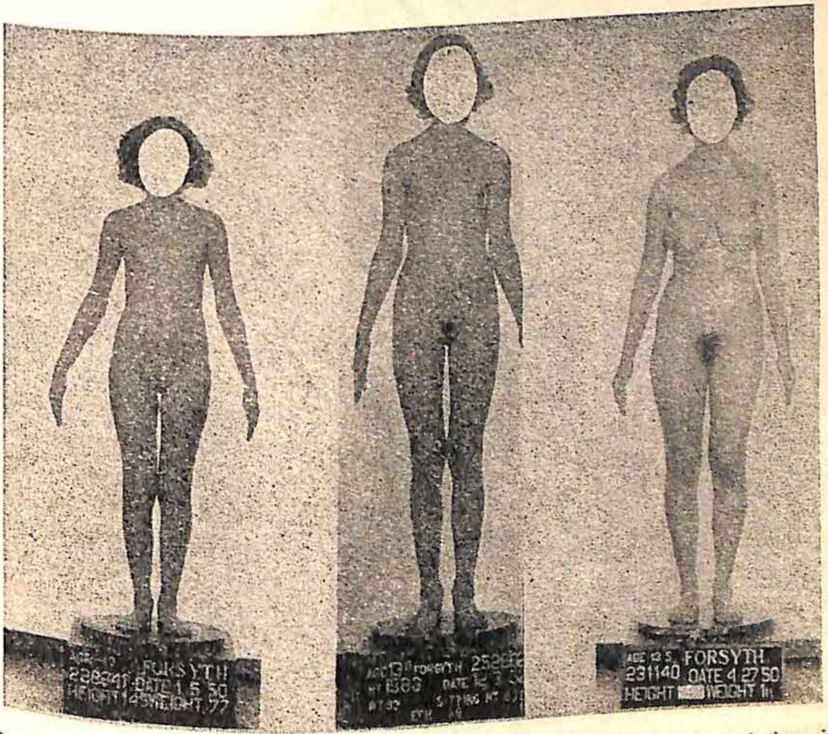
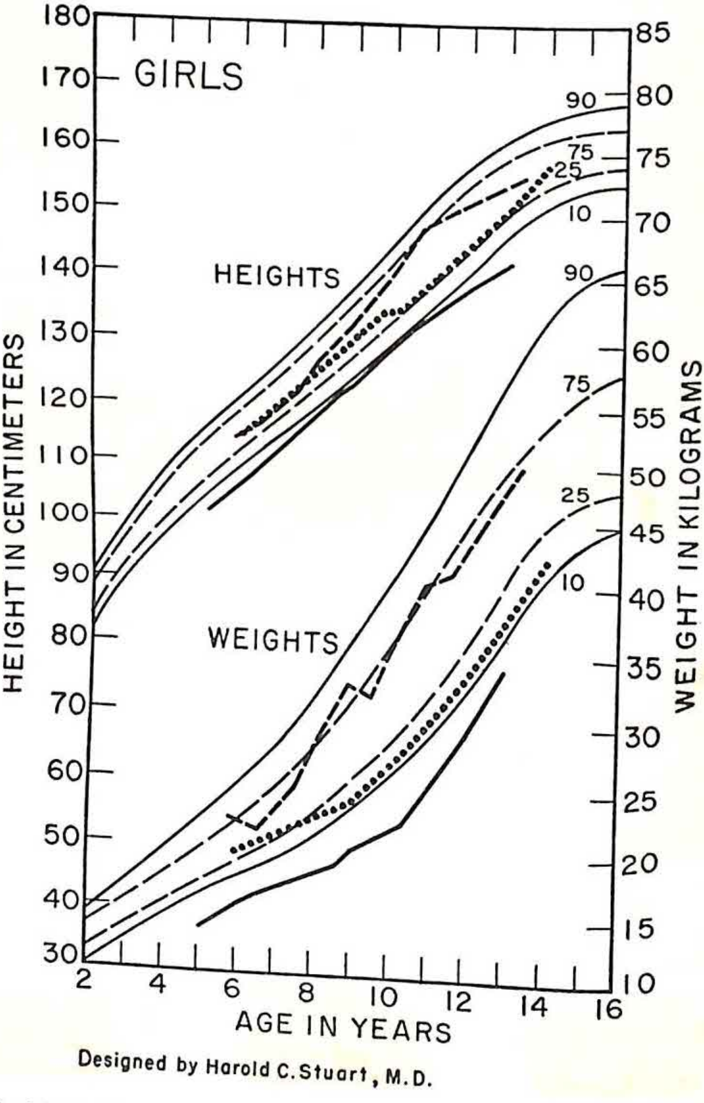


FIGURE 1—Somatotype photographs showing the wide range of variation in growth and development of three girls of the same age.

heavier than girls), and the type of body build of the child. Although tables of average weight and height have long been used to evaluate the child's rate of growth, it is far better to make this evaluation in terms of his own growth pattern, since children of the same age vary considerably in their rate of development (*see* Figs. 1-4). As long as a child eats adequately and maintains a steady gain in weight and height, there need be no concern over comparisons with children of different stock and build.



Designed by Harold C. Stuart, M.D.

FIGURE 2—The height and weight records of the three girls shown in Figure 1.
——— most retarded .... slightly retarded — — — most advanced

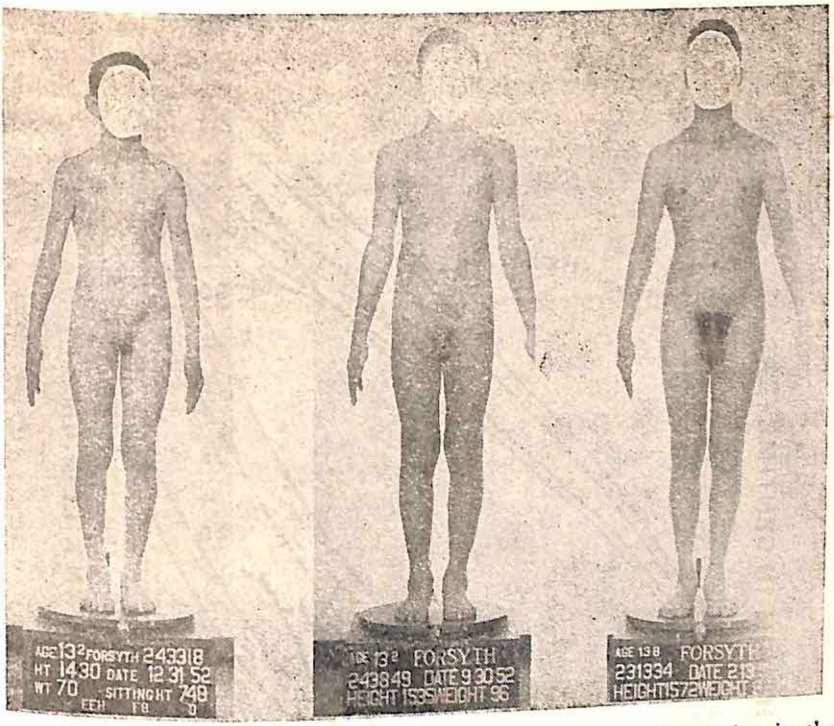


FIGURE 3—Somatotype photographs showing the wide range of variation in the growth and development of three boys of the same age.

ADOLESCENCE

Nutrition during Adolescence (10 to 16 years)

The nutritional requirements of the adolescent are markedly different from those of an adult or a child. Girls and boys need a large amount of food throughout adolescence, as basal metabolism and growth are greatly accelerated during this period. The onset of menses and puberty will exert a tremendous influence, psychologically and physically, on the adolescent. The food requirements of these adolescents are extremely high. Calories may increase from 2500 to 3800 per day; protein increases from 70 to 85 gm. per day; calcium increases from 1 to almost 2 gm. per day; iron increases to 15 mg.; and all the vitamins are correspondingly increased (11). Parents who do not understand this increased need for food become unduly worried and restrict the food intake of their children, thereby forcing them to get their required calories from non-protective foods at the local emporium.

The parents of the adolescent are not only upset by the nutrition habits of their offspring, but are beset by many other problems at the same time, such as lowered school grades, assertion of independence, disobedience, and

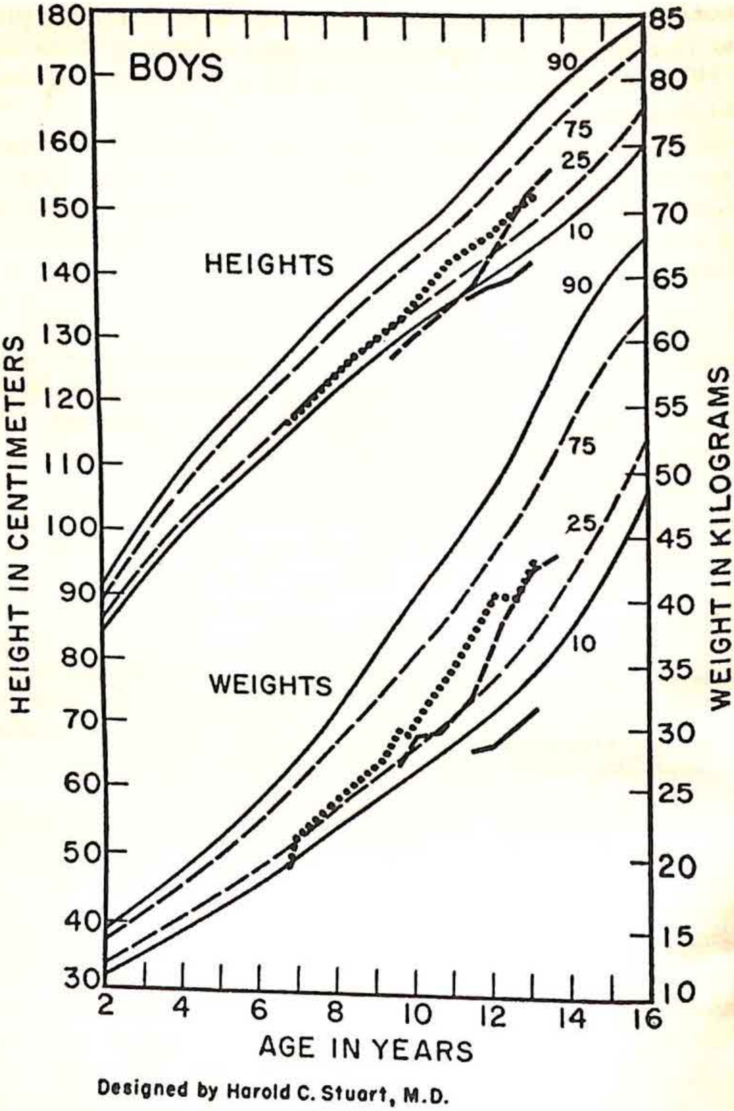


FIGURE 4—The height and weight records of the three boys shown in Figure 3. ——— most retarded ········· slightly retarded — — — most advanced

resistance to criticism and advice. If these transitory problems are handled inadequately and unwisely by the parents, the personalities and outlook of these young people are often badly damaged.

Adolescence is both a biological process and a period of social transition. The juvenile organism undergoes a process of physical growth and maturation as it moves toward adulthood. At the same time, the individual must pass through a transition from the status and conduct of a child to the responsibilities of an adult. The suitable adjustment of these processes, each to the other, and the appropriate direction and timing of the demands made by adults upon the developing adolescent are important factors in the ease of growing up in our culture.

With a better understanding of the organic growth and maturation of boys and girls during the second decade of life, and with more insight into their personality development and social adjustment, we may hope to control some of the sources of pressure and strain in the lives of many adolescents (1).

Dental Health in Adolescence

During this crucial period between childhood and adulthood, the adolescent finds himself confronted with many problems concerning his health. Up to now he has not been interested in his health needs, but with the advent of the many physical and emotional changes that are taking place, he is at once curious, apprehensive, and fearful, and if he is not guided properly, and if his fears are not alleviated by careful explanation and counsel, he becomes a source of major concern to his parents and to those who are working with him. He does not want to be reminded of his shortcomings, such as acne, poor teeth, poor musculature, lowered school grades, and non-acceptance by his friends, and yet it is during this period that these problems are likely to require more attention than at any other time. Of particular concern is the tendency to increase in dental caries activity during this period (*see* Fig. 5).

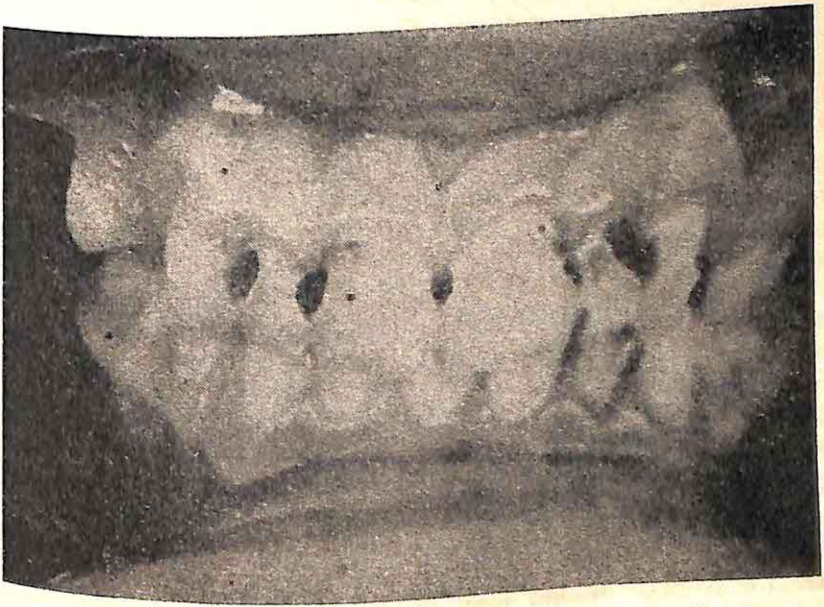


FIGURE 5—Thirteen-year-old white boy with extensive dental caries.

It is apparent that new carious lesions do not develop at a constant rate throughout the human life span, nor necessarily in direct progressive relationship to the length of time that the teeth have been exposed to the oral environment. The increase in number of carious lesions is high during the years of childhood, increasing to a maximum during adolescence, then decreasing to a relatively constant, low rate in early adult life, and so continuing through the rest of life (12).

Likewise, nutritional and metabolic requirements are not constant throughout life. These requirements are very high during the first months of rapid growth in infancy, increasing to a maximum during adolescence and maturation, then decreasing in adult life to a lower level which is relatively constant through the adult life of any individual, except at times of increased demand, such as reproduction and disease.

Since the trends of dental caries incidence and of nutritional requirements parallel each other to some extent throughout life, and since there is evidence that the enamel is not an entirely static structure, is it not possible that the initiation, progress, and control of carious lesions may have a definite relation to, and may at least be partially determined by, the metabolic and nutritional status of the body (12)?

If we accept this proposition, then it becomes our responsibility to give dietary advice that will provide for the protection of all body tissues at all times, including dental tissues. Adolescent children are prone to poor dietary habits, whatever the reasons, and much of the nutrition and dental literature is directed to the high intake of refined carbohydrates and the consequences on the teeth of these children. One very pertinent consideration seems to have been overlooked: that it is not what the child eats that may make the difference, but what the child does *not* eat. If the child eats the quantities of food required to furnish the allowances of essential nutrients, he will have no place for refined carbohydrates. It is impossible for most children to eat both. If they do, they will be greatly overweight in most instances. Parents should follow a consistent well-planned pattern of daily diet. One can no more eat successfully by chance, whim, or fancy, today at any rate, than one can accomplish successfully any other goal without following basic rules.

Our newer knowledge can be used to improve the health and growth of children. It is evident from observations, measurements, and various tests that some children more nearly achieve a state of health and growth in accordance with potentialities than do others. The increase in the standards for height and weight in the last few decades and the improvement of growth after enriching the diet are indications of progress. It is not enough to prevent a child from having rickets, scurvy, or any other disease. It is important that his body be ready to do what the will commands and do it without undue conscious effort. There are too many children today who live in that "twilight zone" between the absence of actual disease and the level of buoyant health which liberates the body and makes enjoyment of life possible, who are victims of a "hidden hunger" almost as devastating as "stomach hunger." Example after example of "precritical" malnutrition can be found in the literature and seen in the clinic. Such subclinical handicaps "cripple confidence, initiative and efficiency, impair daily achievement and satisfaction, shatter ambition and cast a gray veil of uneasiness over what should be the very joy of life" (5).

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DEPENDENCY AND AUTONOMOUS ACHIEVEMENT STRIVING RELATED TO ORALITY AND ANALITY IN EARLY CHILDHOOD

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Several studies have investigated dependency and independence in early childhood. Most of the investigators have offered very similar definitions of dependency. The main difference between definitions in various studies lies in their degree of specificity on both conceptual and empirical levels. Only recently have attempts been made to formulate more precisely certain aspects of this phenomenon and to test these formulations with technically rigorous methods (2, 4, 6). Unfortunately there has been much less consistency among investigators in the definition of independence. Characteristics subsumed under this concept range from non-distractability and social assertiveness (6) to autonomous achievement striving (2) and emotional maturity (12).

One source of confusion in earlier studies derived from the formulation of dependency and of independence as a bipolar continuum (3, 11, 12). Such an assumption was questioned by the present author in a previous study (2). It was shown that conditions of learning might favor simultaneous increase of both dependency and independence in many children. The two concepts were then defined separately and the relationship between them was tested. The findings indicated a moderately inverse but not a bipolar relationship. Since then another investigator (6) has offered added evidence against the bipolar assumption of dependency and independence.

As a next step in the study, we are turning to an investigation of variables which might relate systematically to dependency and independence. Here, psychoanalysis has paved the way for the choice of relevant variables. It has stressed the importance of experiences in infancy for the formation of dependency. The state of dependency is most prominent in early infancy. Experiences of satisfaction and frustration in interactions with the parent, the dependency object, first center around oral activities or

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feeding and later around anal activities or toilet training. Strong dependency strivings in later life have been clinically linked to fixations of oral activities and attitudes in early childhood. Such fixations were presumably caused by experiences of oral frustration and conflict in infancy. Abraham (1) was among the first to postulate such relationships and to present much clinical evidence in support of his assumptions. Since then, there have been many references in psychoanalytic literature to the relationship of orality and dependency. A few clinical writers have dealt explicitly with this topic in an attempt to elaborate Abraham's original formulations (7, 12).

Several research studies have made direct contributions in this area. One group of studies investigated the relationship of early oral experiences to one oral fixation, namely, thumbsucking in childhood. Levy (8), Roberts (10) and Yarrow (17) reported a higher incidence of oral fixation as a result of oral frustration in infancy. Sears and Wise (14) found that children who experienced greater oral indulgence in the form of late weaning, and therefore presumably acquired a greater oral drive strength, gave more evidence of oral frustration (reactions) and a higher incidence of oral fixation. Several other studies investigated the relationship of early oral experiences to dependency. Levy (9) demonstrated how overprotective mothers who overindulged oral and other needs of their infants produced increased dependency strivings in their children. Sears *et al.* (13) investigated specifically the relationship of early oral frustration experiences and dependency, and reported findings of a positive association of infant feeding frustration and dependency in preschool children. These studies tend to confirm the importance of early oral experiences for the development of oral fixations and of dependency. They also indicate that experiences of change in oral drive in the form of both frustration and overindulgence seem to affect the above learning processes without yielding concrete evidence for differential effects of these two conditions of reinforcement. Whiting and Child (15) attacked the problem directly by distinguishing between negative and positive fixation of orality and of dependency and by postulating different learning conditions for these two types of fixation. They tested their formulations on cross-cultural data and found more supportive evidence for negative fixation, namely, for association of oral socialization anxiety with oral fixations, and of dependency socialization anxiety with heightened dependency. None of these studies investigated the relationship between oral fixations and dependency. It is of interest to note that psychoanalysts have presented as much clinical evidence for this association as for parental behaviors as determinants of oral fixations and of dependency strivings.

The relationship between anality and dependency has been less clear and has received less attention both in psychoanalytic and in research literature. Abraham (1) maintains that the child accepts demands for toilet training in order to secure approval and love from his parents. In another place (1) he links resistance to toilet training to passive dependent attitudes toward the analyst. Another writer, referring to the period in infancy before anal control is instituted, states: "At this period the anal activities cannot fail to be associated with tender maternal care. These activities can therefore acquire the meaning of attracting or soliciting maternal love" (7). However, in psychoanalytic literature for the most part, childhood experiences of conflict and frustration in anal activities are linked to other personality characteristics in later life more clearly than to dependency.

In the research literature we find a recent report by Sears *et al.* (13) who tested the relationship between severity of toilet training and dependency in early childhood. These investigators found no consistent association of these two variables. This study did not include data on anal fixations in the children and how these relate to dependency.

This brief review of relevant literature will not be extended to oral and anal activities in relation to independence because, as was pointed out earlier, there has been very little uniformity in definition and use of this concept.

A last point of interest is the role of psychopathology in relationships of oral and anal response tendencies to dependency and to independence. This formulation, in a way, reverses the problem as one has encountered it throughout the literature. One usually finds clinical examples of the above relationships described in studies of pschopathology. In some of those studies, for instance, emotional disturbances like depression, anxiety attacks, distortions of perception and memory, etc., are explained as consequences of oral fixations and strong dependency striving. It might be of interest to investigate whether the relationship of orality and dependency varies as a function of both degree and kind of psychopathology.

The study to be reported constitutes a replication and extension of an earlier study in which the conceptualization of dependency and autonomous achievement striving[3] was put to an empirical test (2). For purposes of the present report we shall briefly restate the conceptual framework for the specific component measures of dependency and of autonomous achievement striving before we proceed to link them to orality and to anality.

Dependency originates in the helplessness of the human infant. Intervention by the parent to gratify the needs of the infant is necessary for his survival. At first, the infant elicits such protective intervention in the parent through signals of distress only because the parent is alerted to such cues from the child. In that stage the infant reacts primarily to the outcome of the parental intervention rather than to the parent as an external object. Gradually the child reacts not only to the outcome of the intervention, namely, the gratification of its needs, but to the protective intervention itself and to the intervener, the parent. To the extent to which protective intervention is a physical necessity for the child we may speak of instrumental dependence on the parent. When intervention is sought by the child as an end in itself we deal with dependency as a psychological motive. Thus, in essence, we conceive of dependency as the result of associations in the infant's experiences of changes of tensions within the organism with experiences of intervention by a parent in the form of physical contact, nearness, help, attention, and praise. Repeated experiences of such associations will result in dependency drive, which will manifest itself in the form of *seeking* help, attention, recognition, physical contact and nearness to others. Our hypothesis to be tested is that the strength of these five dependency components will vary consistently from child to child.

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[3] For those who are familiar with the earlier study, we have come to the conclusion that our particular measures of independence are equally characteristic of what is generally meant by autonomous achievement striving or mastery motive.

Autonomous achievement striving, like dependency, has its roots in early infancy. It appears at first as a physical necessity. The infant who cries and struggles manifests unaided effortful behavior in reaction to inner organic tension states. At first, such autonomous striving is a physical fact and necessity and has little resemblance to a similar phenomenon in later life which takes the form of action in a state of distress rather than passive resignation. The concept of autonomous achievement striving was derived by us from an analysis of the child's exploratory behavior. Initially, exploratory activity in the infant appears as crying did earlier, only it is more clearly directed toward the physical environment, not excluding his own body. As the child's sensory and neuromotor system develops, he exerts an increasing amount of effort in his own unaided exploration of the environment. Such efforts result in mounting and decrease of tension within the organism. We assume this to be an essential condition for the development of autonomous achievement striving as a psychological motive.

Since we have chosen spontaneous exploration of the environment by the child as an original experience in which autonomous achievement striving develops, our specific measures were derived from an analysis of that experience. At first, the child starts to act or to take initiative. Once action has been started in exploring the environment, the child encounters obstacles which he tries to overcome. When the obstacle is surmounted, he tries to complete the activity. Each of these steps is reinforced as part of a sequence. This means that we expect an increasing consistency of level in any given child with respect to his trying to take initiative, to overcome obstacles and to complete activities. Two other features were derived from this analysis. To the extent to which a child succeeds in these three aspects of his exploratory activity, to that extent will he derive satisfaction from work, and want or try to do things by himself. These aspects, although not exhaustive, we assume to be genetically essential components of autonomous achievement striving. As in the case of dependency, we assume that components of achievement striving will vary consistently from child to child.

We can now formulate in a testable way the validity of our proposed concepts in terms of internal consistency of each and of distinguishability from one another. We assume that components of dependency will correlate more positively and more significantly with one another than with components of autonomous achievement striving and vice versa. The reason we are not expecting that dependency and achievement striving will be bipolar has been discussed in an earlier study (2).

The second major problem of this study concerned itself with the genetic anchorage of dependency and of autonomous achievement striving. Our formulations have used experiences of changes in biological drive states in early childhood as a learning factor in the formation of dependency and autonomous achievement striving. We have selected (oral) hunger and (anal) evacuation drives for this purpose. Our measures of drive strength are derived from responses which more or less directly relate to either the organs or the processes by means of which the hunger and evacuation drives are reduced. Although we have confined ourselves in the present study to overt oral and anal behavior manifestations to the exclusion of phantasies and subjective experiences, our response dimensions ranged from nutritive to non-nutritive behavior with respect to orality, and from direct evacuation to spilling, messing and anal talk with regard to anality.

We set out to investigate the specific assumption that dependency will correlate positively with both oral and anal behavior manifestations in early childhood, but more highly with orality than with anality. A positive relationship of dependency with orality was assumed as a function of associations within the child's experiences of oral responses when in a state of mounting and decreasing hunger tension with intervention by parents in the form of help, attention, physical contact and presence, and somewhat later, parental approval and disapproval. To the extent to which a child persists beyond infancy on a heightened level of oral need, to that extent he should expect or seek the type of relationship with parents or other adults which we have defined as dependency.

The correlation of dependency with anality was also expected to be positive, but lower than with orality. This assumption follows from an expectation of generalization within the child's experiences and responses relating to both orality and anality. If such a generalization exists in the child's experiences related to both drive systems, it should produce a similar but probably lesser relationship of anality to dependency as of orality to dependency. The correlation between oral and anal behavior manifestations is clearly an appended hypothesis here.

There are other reasons why the relationship between anality and dependency should at best be moderately positive. Before toilet training, the child experiences satisfaction from evacuation without direct and immediate intervention by the parent. If a child reacts to training with much conflict, it may increase dependency but often in very indirect and pathological forms. Clinical experience, as reflected in the literature, indicates that heightened dependency resulting from such conflicts is more likely to be passive (1). We are limiting ourselves to measures of overt and of active dependency striving which may miss a good deal of such heightened indirect and passive dependency striving.

With regard to autonomous achievement striving, we set out to investigate the specific assumptions that it will be inversely correlated with both anality and orality, but more highly negatively with anality. The expectation of a higher inverse relationship of autonomous achievement striving and anality is based on the observation that the development of sphincter and other muscle controls coincide temporally with gross motor development and increased effectiveness of exploratory behavior from which we derived our formulation of autonomous achievement striving. If our observations are correct, complications in the development of sphincter control and in experiences surrounding it should lead to heightened anality. They should have a negative effect on autonomous achievement striving in general as defined by us. Extreme conflict and frustration reactions to training toward sphincter control may produce certain heightened forms of autonomous achievement striving which, however, would fail to meet some of our criteria. Examples of such cases would be a heightened striving to achieve with impaired ability to complete work, with extreme frustration reactions to interferences or obstacles, with over-emphasis on details, with lack of satisfaction from work itself. Such manifestations would result in low scores on our measures of autonomous achievement striving, although more precise controls will eventually be necessary to differentiate between these phenomena and the ones we set out to study.

A lower but still inverse relationship between autonomous achievement striving and orality was expected. Oral mastery is a first step in the progression toward more articulate and complicated ways of manipulating the external environment for the sake of drive or tension reduction. If a child becomes fixated on the oral level or regresses to it, this should interfere with the full utilization of energy and interest to use more articulate motor activity as well as ideational processes in an effective (and realistic) exploration and manipulation of the physical environment. Since our autonomous achievement striving measures have been derived from the latter, fixation on or regression to the oral level of mastery and pleasure seeking should relate inversely with achievement striving.

As a last step in this area of our study, we were interested in investigating the effect of controlling the relationship of dependency and autonomous achievement striving to each other in children. To the extent to which orality and anality are positively related and they rather than other variables are associated with each of the above, the relationship between dependency and autonomous achievement striving should be an inverse one. So far, we have presented a conceptual framework for relationships of orality and anality to each, regardless of whether a child is high in dependency and low in autonomous achievement striving, vice versa, or high or low in both. Such a question is meaningful only if dependency and autonomous achievement striving measures are not constructed to yield a priori an inverse relationship. Since we have assumed opposite directions for the relationships of orality and anality to dependency and to achievement striving, it follows from this that an inverse relationship between dependency and autonomous achievement striving in children should show an increased association with oral and anal fixations. That means, in the case of a single child, if he is high on orality, he is likely to be high on dependency and simultaneously lower on autonomous achievement striving measures. This formulation does not extend to children who are high or low on both dependency and autonomous achievement striving. Such patterns do not fall within the limited conceptual framework so far presented. We decided to supplement the testing of our conceptual framework within its own limits by systematically separating from a scattergram of our total sample a group of children who show a high inverse relationship between dependency and autonomous achievement striving. This procedure should permit of an additional test of our conceptualized relationships of orality and anality to both dependency and autonomous achievement striving.

Beyond the investigation of a systematic conceptual framework, our study extended to several exploratory phases. A point of interest in our sample was a considerable range in the degree of emotional disturbance among our children. Although no specific assumptions followed from our conceptualization on this point, we hoped that our data would permit some hunches concerning the relationship of our variables to the extent of psychopathology in early childhood.

Our sample of children included four pairs of same-sexed twins. We believe that twinship might be a relevant variable affecting the types of relationships we set out to investigate. Our formulation of dependency as a result of parent-child interaction implies that the presence of two twins should in some way affect both sides of this interaction, and therefore the learning processes in the child which lead to the formation of dependency striving. We planned to explore differences between twins and non-twins in our findings.

The children included in the present study contained an approximately equal number of boys and girls. Beyond the general interest in sex differences, we planned to control this factor in our data to make our findings comparable to the results of another study (13) in this area.

From the foregoing, the present study set out to investigate: (1) whether dependency and autonomous achievement striving are each internally consistent constructs, i.e., whether our suggested component measures of (active) dependency striving correlated more highly with each other than with component measures of autonomous achievement striving and vice versa; (2) whether dependency will correlate positively with both orality and anality, but more highly with orality; whether achievement striving will correlate negatively with both anality and orality, but more highly (negatively) with anality; (3) whether an inverse relationship between dependency and autonomous achievement striving will increase our predictions and constitute a more comprehensive test of our conceptual framework. The other aspects of the present study were to be of an exploratory nature to help us in the extension and elaboration of our conceptual framework on the basis of relevant empirical findings. They were as follows: (4) (a) effects of psychopathology, (b) effects of twinship, and (c) effects of sex differences on the relationships studied.

PROCEDURE

Subjects

The present study was carried out in the therapeutic nurseries of the Child Development Center over a period of 2½ years. It included 52 children, 25 boys and 27 girls ranging in age from 28 to 74 months. The children came for the most part from middle and lower middle class parents who brought them to the Center to seek help in coping with the children's problems.[4] Among these children were four pairs of twins, nine children who had been diagnosed as borderline psychotic and seven children severely disturbed but unclassifiable in terms of nosology.[5] The remaining 28 children were less disturbed and characterized by difficulties in socialization and in interpersonal relationships.

Construction and Reliability of Measures

Five scales of dependency and five scales of autonomous achievement striving with seven rating steps on each scale were used by teachers at least three times annually. The procedure of training teachers in the use of this scale has been the same as in an earlier study (2). Each rating was based on the observation of approximately 10 children in a nursery group by their two teachers over one week's period. The scales were as follows:

Dependency Striving

1. How often does the child seek help?

By *help* is meant any form of *assistance* from another person, e.g., doing something for the child like dressing, washing, finding a toy for him, pushing him in the swing, protecting him against another child when he is attacked or something is taken away from him, etc., giving instructions and guidance, like demonstrating how to build, play, paint, etc., giving what he asks for, e.g., a toy to play with, color to paint, etc.

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[4] Children with organic impairment, mental retardation and psychosis are not taken into the nursery. Only children from intact families, that is, both parents living together and willing to participate in the Center program, were accepted into the nursery. It is the policy of the Center nursery to take in younger siblings of children already enrolled for better study and treatment of the total family. This procedure assures the Center nursery of approximately 20 per cent to 25 per cent children who would otherwise attend "normal" nurseries.

[5] There was full agreement among three judges on classifying 15 children as severely disturbed. On one child, only two judges agreed.

Very often and very persistently		Often and persistently		Occasionally and little persistence	Very rarely and without persistence	
7	6	5	4	3	2	1

3. How often does the child seek recognition?

By recognition is meant any form of praise and approval. Child comes running to teacher showing her what he did, e.g., exclaiming, "I washed my hands"; telling her that he had carried out a command or request by the teacher; e.g., "I put the blocks back," "I drank all the juice," etc. Calling the teacher to see what he did, e.g., in the sand box, at painting, in the playroom, etc. Shouts to teacher, "Watch me," when on the swing, when on a bicycle, when feeling he is especially good, doing something praiseworthy, etc.

5. How often does the child seek physical contact with teacher?

Physical contact: wants to be picked up, holds on to teacher's dress, hugs adult's knee, holds or reaches for teacher's hand, puts arm around teacher's neck (while teacher demonstrates to child, reads to group, on the playground, etc.).

7. How often does the child seek attention?

How often does the child manage to keep others occupied with him? Getting another person to occupy herself with the child, e.g., talking to him (answering questions, explaining, watching the child, giving approval, praising the child, scolding, punishing, etc.). Try to ignore whether the child does it in a pleasant or unpleasant way, whether he is clever and skillful or clumsy or inefficient (a nuisance) in his efforts to draw attention, e.g., talking a lot, asking questions, volunteering answers, making a noise, making faces, being uncooperative, disobeying, excelling others, etc. Use as your basic criterion how often he manages to keep others occupied with him.

9. How often does the child seek to be near to others?

By *being near* we mean just what it says. The child manages to sit near the teacher (or another child), to play where the teacher is (or where another child or children are) regardless of whether he interacts with the other person or not. If the child is active and skillful, it may express itself in the form of playing with, working with, talking to, offering help, asking for help; on the other hand, if the child is quiet and timid he may just hang around, watch, stand or sit near another individual child, teacher, (observer) or near a group. This differs from attention because it refers just to proximity and does not say anything about the relationship between the child rated to other children or to the teacher when they interact.

Autonomous Achievement Striving

2. How often does the child derive satisfaction from his work?

This can be judged from the following behavior: *The child finishes its activity*, e.g., painting, building, play, etc., without asking teacher for comment; without making derogatory comment on the work of other children; or without showing disturbance or irritation by bullying other children, dashing off wildly, destroying one's own work, etc., *but instead* moving away from a completed activity and getting ready for a new period.

4. How often does the child attempt to carry out routine tasks by himself?

Routine tasks: e.g., dressing, washing, eating, toilet behavior, etc. The rater is to put special emphasis on the child's *attempts* to carry out these routine tasks by himself. The occurrence of such attempts can be observed directly by seeing the child trying to dress by himself, to dress or undress at toilet or swimming pool, trying to get the water running for washing, etc. (while the teacher assisted another child), or the child may be found doing any of these in a clumsy way *but* doing them as best he can. (The rater must be careful to not let her feeling of a self-evident duty to assist the child in all routines when the child needs assistance interfere with an objective appraisal.)

6. How often does the child attempt to overcome obstacles in the environment by himself?

By *obstacle* we mean missing a necessary tool or object in play or work, having misplaced a towel, a toy, clothing apparel, etc., desired objects that are placed out of reach, etc. The extent of the child's striving to overcome such obstacles *by himself* can be seen when, after his turning away from an ongoing activity (play or work), he returns and continues after having overcome the obstacle. This is distinguished from reaction to such obstacles which are characterized by the child's interrupting his play or work to join other children or another child, to scream out loud—"I need a hammer," "I need another truck"—to go from child to child begging, demanding, and finally grabbing the desired object, or simply beginning to daydream, wandering off aimlessly or crying. How often does the child seek or strive to overcome obstacles in the environment on his own without getting distracted from his ongoing activity?

8. How often does the child take initiative in carrying out his own activity?

When the child comes into the playroom, art room, or playground he knows what he wants to do and proceeds to do so, e.g., sandbox, bicycle, swing, building a ship, or a tunnel with blocks, etc. This can be distinguished from going out into the playground and looking around for someone to join, clinging to the teacher, standing or wandering around aimlessly until teacher takes initiative, asking someone to play with him, or mostly wanting toys or tools which other children have already begun to use. It does not matter whether another child enters his activity occasionally, the main criteria being whether he has his own ideas and proceeds to carry them out.

10. How often does the child complete an activity?

Once the task is set by the teacher or selected by the child, the child carries it out to completion, e.g., construction, play, art, etc. This is to be distinguished from giving up easily, getting quickly bored, disinterested or distracted. It is also to be distinguished from rigid perseveration, i.e., a child just keeping on doing one thing regardless whether it is a successful or unsuccessful attack on the task. Use as your basic criterion how often a child carries an activity to its completion.

With turnover in teaching staff, in three consecutive years 11 teachers participated in the rating. The product moment coefficients of reliability between teachers on the five component dependency scales[6] ranged from

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[6] The dependency measures used in this study were confined to the child-teacher interaction. Measures for the children's dependency on other children were obtained but have not been included in the present study.

+.62 to +.84 with a median of +.78, and on the five scales of achievement striving, from +.67 to +.80 with a median of +.75. Eighteen reliability coefficients (*rho*) for summated dependency scores, i.e., the sums of component scores computed separately for each rater pair on every single rating, ranged from +.67 to +.91 with a median of +.84; 17 coefficients for summated component scores of achievement striving, from +.69 to +.93 with a median of +.83. This does not include two of the reliability coefficients for dependency and three for achievement striving scores (12 per cent of the total) which were not used as data because they did not reach significance ($p<.05$).

We used in our analysis all reliable ratings available for each child. In the case of children who were in our nursery for two or three years, these total scores included ratings made by different teacher pairs in successive years. An analysis of variance was carried out to test the justifiability of such a procedure. The *F* ratio for the variance between children was 12.31 ($df_1=31$, $df_2=100$) and significant ($p<.001$) when based on three or more dependency ratings by the same or by different teacher pairs for any one child. The *F* ratio for the variance between children on scores of autonomous achievement striving was 12.45 ($df_1=32$, $df_2=104$) and significant ($p<.001$). This means in effect that the children's relative position in the group did not change appreciably in teacher pairs who rated them at various times in different years of their attendance in the nursery.

Our data concerning the children's oral and anal behavior manifestations in the nursery were obtained from extensive annual summaries written

TABLE I

ORAL AND ANAL BEHAVIOR MANIFESTATIONS USED IN THIS STUDY

Oral	*Anal*
1. Biting	1. Lack of bowel control
2. Nailbiting	2. Spilling
3. Putting objects in mouth	3. Smearing
4. Sucking	4. Messing with clay, paint, sand, etc.
5. Over-eating	5. Playing with water
6. Finicking about food	6. Throwing food or objects
7. Refusing food	7. Avoiding messing
8. Wanting to be fed	8. Avoiding use of toilet
9. Asking for bottle	9. Using anal words
10. Manipulating mouth and lips	
11. Spitting	
12. Drooling	
13. Licking	
14. Talking like baby	
15. Talking nonsense	
16. Licking mucus	

together by two teachers on every child in their group and based on 180 days of contact with the children. The teachers followed an outline of which one section asked for descriptions of outstanding oral and anal behavior manifestations in every child. Only this section was used for content analysis although it constituted only about 8 per cent of the total outline and even less of the finally written summaries.

In the content analysis presence or absence of mention of any of the oral and anal behavior manifestations (see Table 1) was recorded by coders. Agreement between two coders on 11 cases ranged for oral items from .50 to 1.00 with perfect agreement in over half the cases, and for anal items from .80 to 1.00 with a median of .83.

RESULTS AND DISCUSSION

Dependency and Autonomous Achievement Striving

Our first hypothesis was that dependency and achievement striving are each internally consistent. Component measures of dependency should then correlate more highly with each other than with component measures of achievement striving, and vice versa. Inspection of Table 2 reveals (a) that all correlations *within* dependency and *within* achievement striving are positive, whereas only 50 per cent of the correlations *between* the two sets of components are positive; (b) that 19 of the 20 correlations *within* the two sets are statistically significant ($p<.01$), whereas 19 of the 25 correlations *between* the two sets of components fail to reach statistical significance ($p<.05$); and (c) that, with one exception, all correlations *within* dependency and *within* achievement striving are higher than any positive correlation *between* the two sets of components. This means, with the one exception cited, that there is no overlap between the lowest significant *within* correlations and the highest positive correlations *between* the two sets of components. We may consider these findings to be strongly confirmative of our first hypothesis. These findings also confirm the results of the original study (2) and of another study (5). In the earlier investigation this writer tested the internal consistency of the five dependency components and the five components of achievement striving (independence) on a sample of preschool children who attended a "normal" nursery.

Two more results emerge from inspection of Table 2. First, the diagonal of the rectangle representing correlations between the two sets of components gives correlations between scales which were always rated in sequence to each other. These coefficients are —.02, .07, .09, 0 and .16. Since all of these coefficients approximate zero, we may conclude that position of items had no effect on the direction of the correlations between components.

Secondly, when we inspect the correlations *within* dependency and *within* achievement striving, we find that each set has one component which is consistently weaker in relation to the rest than the other four. The

TABLE 2

PRODUCT-MOMENT COEFFICIENTS OF CORRELATION WITHIN AND BETWEEN FIVE COMPONENTS OF DEPENDENCY AND FIVE COMPONENTS OF ACHIEVEMENT STRIVING, BASED ON 51 CHILDREN RANGING IN AGE FROM 28 MONTHS TO 74 MONTHS

Scales	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Dependency									
1. Seeking help									
2. Seeking recognition	.50								
3. Seeking physical contact	.61	.48							
4. Seeking attention	.78	.53	.71						
5. Seeking physical nearness	.66	.48	.83	.76					
Achievement Striving									
6. Deriving satisfaction from work ..	—.02	.29	.29	.04	.08				
7. Trying to do routines by oneself ..	—.41	.07	—.12	—.26	—.10	.40			
8. Trying to overcome obstacles ..	—.28	.10	.09	—.02	—.20	.64	.37		
9. Trying to initiate activities	—.13	.17	.22	.00	—.09	.70	.21	.83	
10. Trying to complete activities ...	—.02	.30	.32	—.09	.16	.90	.41	.67	.68

$N = 51,\ p < .01$ for $r = .36,\ p < .05$ for $r = .28$

correlations of *seeking recognition* with the other four components of dependency range from .48 to .53, whereas the correlations among other dependency components range from .61 to .83. Similar findings have emerged from other recent studies of dependency in early childhood. One investigator found that seeking praise correlated less with seeking help and with attention-seeking than the latter behaviors did with each other (4, 5). Another investigator, who separated dependent behavior into two categories, "Clinging to and seeking affection from teacher" and "Seeking attention and approval from teacher," reports a positive but low correlation between these two categories in four- and five-year-old children (6).[7] These findings may be due to the fact that parental recognition in the form of praise and approval for nondependent behavior is an important factor in the growth of autonomous achievement striving with age, and in the simultaneous decline of more infantile strivings such as seeking help, contact, proximity and sheer attention. The arrival of a younger sibling who has first rights to infantile dependency claims may force early inhibition of the same in the older child. Similarly, according to clinical experience, a fusion of aggressive and dependent drives may result in anxiety over rejection or punishment. If reaction formation is the prevalent defense against such anxiety, seeking praise and approval for being a good child, i.e., not aggressive and not dependent, may constitute a main substitute gratification for other unexpressed dependency cravings.

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[7] Heathers reached the conclusion from his findings that emotional dependency variables are uncorrelated and do not constitute a general trait. It must have been an oversight when he stated: "These findings are consistent with those reported by Beller," since this writer has demonstrated the opposite. One of the reasons for Heathers' (6) findings may be that he has classified dependent behavior into two categories which are less related than other dependency variables.

When we turn to the componets of achievement striving, we find that correlations of *trying to do routines by oneself* with the four other components range from .21 to .41, whereas the correlations among the latter range from .64 to .90. As in the case of *seeking recognition* and other dependency components, this component accounts for all correlations below $r=.60$ among component measures of achievement striving. It might be that *trying to do routines by oneself* often signifies a need for conformity rather than indicating autonomous achievement striving as we have conceptualized it.

We feel that these two weaker components should not be excluded because each still correlated significantly with its set. However, further research concerning these components might throw important new light on the composition of dependency and achievement striving.

Relationships between Dependency, Autonomous Achievement Striving, Orality and Anality

Our second hypothesis concerns the conceptualized genetic link of dependency and achievement striving to oral and anal response tendencies. We expected on the basis of our conceptual framework that dependency should be positively correlated with both orality and anality, but more highly with orality; achievement striving should be negatively correlated with both orality and anality but more highly negatively with anality. The findings presented in Table 3, Part A, are based on summated scores.[8] We find that dependency relates positively to orality ($r=.30$) and to anality ($r=.15$). Achievement striving relates negatively to orality ($r=-.15$) and to anality ($r=-.30$). The stronger and statistically significant relationships are between dependency and orality, and between achievement striving and anality. These findings tend to support our hypotheses both in direction and in the relative sizes of our predicted relationships. However, the relationships of anality–dependency and of orality–achievement striving are weak and not significant.

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[8] See Table 1 for specific items from which the total oral and anal scores were derived.

TABLE 3

PRODUCT-MOMENT COEFFICIENTS OF CORRELATION BETWEEN DEPENDENCY, ACHIEVEMENT STRIVING, ORALITY AND ANALITY BASED ON 49 CHILDREN RANGING IN AGE FROM 28 TO 74 MONTHS

Items	*1*	*2*	*3*
Part A—Total Group ($N = 49$)			
1. Dependency			
2. Achievement Striving	—.01		
3. Orality	.30†	—.15	
4. Anality	.15	—.30†	.53*
Part B—Total Group Minus Severely Disturbed Children ($N = 33$)			
1. Dependency			
2. Achievement Striving	.02		
3. Orality	.51*	—.14	
4. Anality	.25	—.34†	.55*
Part C—Total Group Minus Twins and Severely Disturbed Children ($N = 25$)			
1. Dependency			
2. Achievement Striving	—.01		
3. Orality	.65*	—.13	
4. Anality	.32	—.40†	.55*

* $p < .01$. † $p < .05$.

The correlation between dependency and achievement striving is zero ($r = -.01$). This finding is in accord with conceptualization in the present and earlier study (2) and with the findings of another study (6). Yet, this relationship was considerably more negative in the earlier study (2). The different findings may be due to the fact that in the present study scores of children were based on as many as seven repeated ratings over a period of 2½ years and, therefore, are more stable than the one rating on which the earlier study was based.

The correlation between oral and anal behavior manifestations ($r = .53$) is the highest one in Table 3, Part A. This finding supports our appended hypothesis of generalization of oral and anal response tendencies within children. The fact that the relationship between dependency and achievement striving measures is zero increases the importance of the different relationships of the two to orality and anality. It points toward the importance of variations in the early experiences related to hunger and elimination drive states as learning factors in the formation of dependency and achievement striving.

Effects of severity of emotional disturbance, twinship and sex differences. When we inspect Table 3, Part B, we find that severe emotional

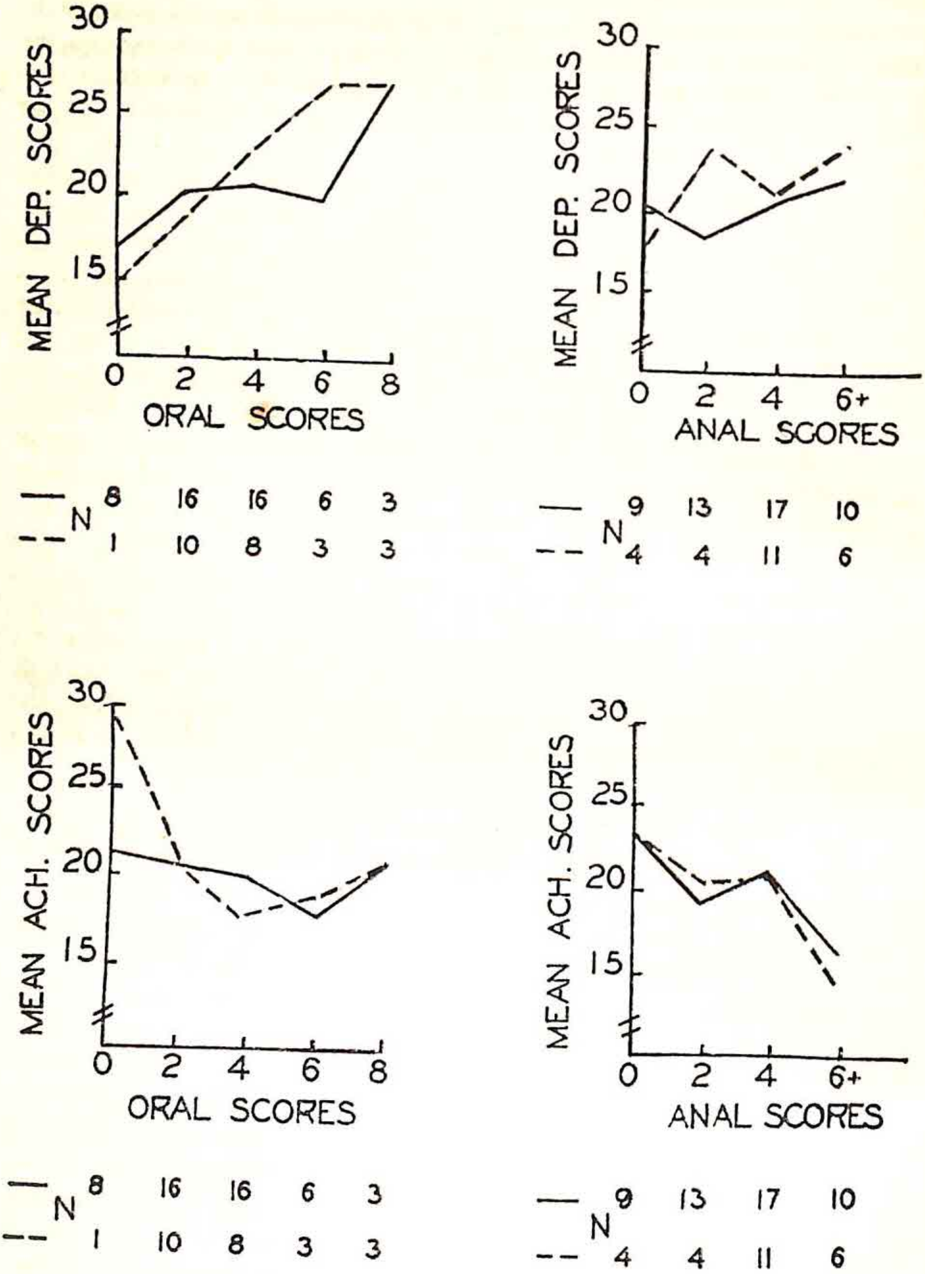

Figure 1—Mean Dependency (Dep.) and Mean Autonomous Achievement Striving (Ach.) scores plotted against Oral and Anal scores, based on the total sample (——) $N = 49$, and based on the total minus twins and severely disturbed children (– –) $N = 25$.

disturbance affects considerably the relationships of dependency to orality. This correlation increases from .30 to .51 when we remove the severely emotionally disturbed children from the total group. It would seem advisable to concentrate on closer study of the effect of psychopathology on the relationship of dependency and orality. Our specific findings tend to confirm the positive link of "oral dependent" for the lesser rather than for the more severely disturbed children.

Twinship was the other factor which we set out to explore in relation to our main variables. Eight twins constitute a very small group for this type of investigation. However, we find changes in our group when, in addition to removing severely disturbed children, we take out the twins (*see* Figure 1). The correlations between dependency, orality and anality increases from the initial sizes of .30 and .15 in the total group to .65 and .32 while the initial relationship between achievement striving and anality ($r = -.30$) shows a slight increase ($r = -.40$) in the predicted direction (*see* Table 3, Part A and Part C). The other three correlations remain almost entirely unchanged. We get a clearer picture of these changes when we also inspect the findings for the group of severely disturbed children and for the group of twins. Table 4, Part A and Part B, shows that only the relationship between orality and anality is high in both these groups ($r = .48$, $r = .54$) and unaffected by the conditions which characterize these groups. All other relationships are near zero and fail to show the patterning hypothesized in our conceptual framework. We conclude from these findings that both psychopathology and twinship affect the formation of object relations, especially dependency on adults as it relates to oral and anal behavior manifestations in early childhood.

TABLE 4

PRODUCT-MOMENT COEFFICIENTS OF CORRELATION BETWEEN DEPENDENCY, ACHIEVEMENT STRIVING, ORALITY AND ANALITY BASED ON 16 SEVERELY DISTURBED CHILDREN AND ON 8 TWINS

Items	*1*	2	*3*
*Part A—Severely Disturbed Children** ($N = 16$)			
1. Dependency			
2. Achievement Striving	—.01		
3. Orality	—.25	—.18	
4. Anality	—.26	—.19	.48
Part B—Twins† ($N = 8$)			
1. Dependency			
2. Achievement Striving	.27		
3. Orality	.19	—.25	
4. Anality	.01	—.07	.54

* $p < .05$ for $r = .50$. † $p < .05$ for $r = .71$.

We examined the effect of sex differences on the relationships studied. Inspection of Table 5 shows that our hypotheses are generally more strongly confirmed in girls than in boys. This applies particularly to the relationships of achievement striving to orality, and of dependency to orality. The correlation between dependency and achievement striving tend to go in opposite direction, i.e., positive for boys and the inverse for girls, especially in the less disturbed group of children. Since most of the coefficients in this table are not significant (nor are most of the differences between coefficients), it is too early to attempt interpretations. However, control of sex differences in further research with these relationships is indicated.

TABLE 5

PRODUCT-MOMENT COEFFICIENTS OF CORRELATION BETWEEN DEPENDENCY, ACHIEVEMENT STRIVING, ORALITY AND ANALITY IN 49 BOYS AND GIRLS, AND IN 33 BOYS AND GIRLS—A GROUP FROM WHICH SEVERELY DISTURBED CHILDREN WERE REMOVED

	TOTAL GROUP		TOTAL GROUP MINUS SEVERELY DISTURBED	
Variables	*Boys* $N = 25$	*Girls* $N = 24$	*Boys* $N = 15$	*Girls* $N = 18$
Dependency – Achievement Striving	.18	—.14	.41	—.45
Dependency – Orality	.15	.39	.42	.60*
Dependency – Anality	.08	.19	.42	.34
Achievement Striving – Orality	.06	—.37	.07	—.45
Achievement Striving – Anality	—.41†	—.33	—.38	—.23
Orality – Anality	.46†	.74*	.57†	.64*

* $p < .01$. † $p < .05$.

The separate analysis of our findings for boys and girls makes possible a comparison with results reported from another study. Sears *et al.* (13) found a positive relationship between infant feeding frustration and dependency,[9] i.e., $r = .29$ for boys and $r = .52$ for girls. Our finding of a positive relationship between orality and dependency is very much in accord with those results. This is especially true for the less disturbed boys ($r = .42$) and girls ($r = .60$) who are more similar to the group of children studied by Sears *et al.* (13). The similarity of the findings from the two studies tends to support the hypothesis that early oral frustration experiences produce a heightened level of oral responsiveness, and that both are positively associated with dependency strivings in children. There is supporting evidence from several studies for the association of experiences of early oral frustration and oral fixation (8, 10, 17). However, this evidence pertains primarily to thumbsucking, which, as shall be seen later, relates poorly to other oral behavior manifestations and poorly to dependency. We must therefore consider these similar findings merely to point toward an integrated research program in which early oral frustrations and oral fixations (not limited to thumbsucking) are studied in relation to each other and in relation to the formation of dependency striving.

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[9] One set of dependency measures in that study were the same as the ones used in the present study.

Sears *et al.* (13) found no relationship between severity of toilet training and dependency. Our findings show a low but increasingly positive relationship between anality and dependency when severity of disturbance and sex differences are controlled. We conclude from these divergent findings that generalizations between oral and anal drive systems, which we found to be high, and experiences other than (only) severity of toilet training will be fruitful directions for research in the relationship of anality to dependency.

Effects of an inverse relationship between dependency and autonomous achievement striving. Having examined the effect of external factors on our hypothesized relationships, we turn to the investigation of increased controls and refinement within the four variables. In our third hypothesis we stated that an inverse relationship between dependency and achievement striving measures, that is, children who are high on one, low on the other, or average on both, should show an increase in the predicted relation-

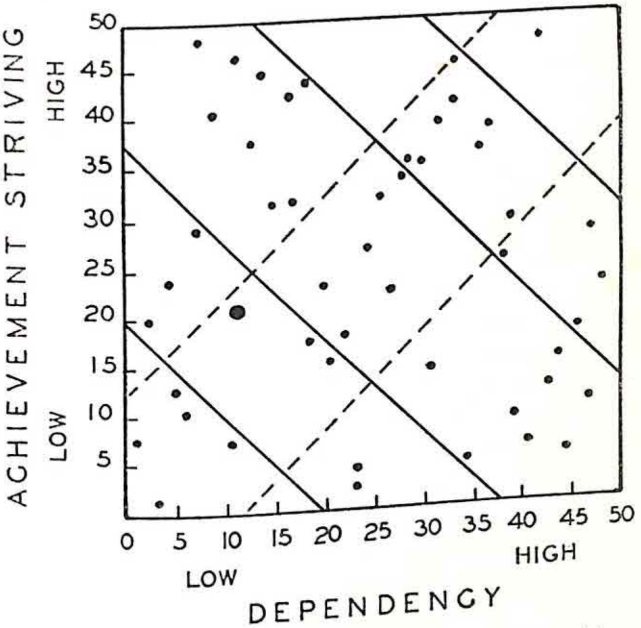

FIGURE 2—Scattergram of Dependency and of Autonomous Achievement Striving ranks, showing plotting of middle and outer bands in negative (———) and positive (— —) directions.

ships of orality and anality to each. Since the correlation between dependency and achievement striving measures was zero (i.e., $r = .01$) in our sample, such a procedure becomes meaningful. We selected three groups of children by drawing lines at an angle of 45 degrees from both the x-axis and y-axis (*see* Figure 2). This divided the scattergram in three sections so that 47 per cent of the sample fall in the middle band, 41 per cent into the two adjacent bands, and 12 per cent into the two extreme outer bands. When we inspect the findings for the group in the middle band in Table 6, Part A, we see that the correlation between dependency and achievement striving measures is highly negative, i.e., $r = -.89$. A comparison of the four crucial correlations in Table 3, Part A, and Table 6, Part A, shows an over-all increase of all four coefficients in the predicted directions. The correlations of dependency to orality and anality increased from .30 and .15 to .61 and .43. The correlations of achievement striving measures to orality and anality increased from −.15 and −.30 to −.57 and −.50. These changes make all our predicted relationships statistically

TABLE 6

PRODUCT-MOMENT COEFFICIENTS OF CORRELATION BETWEEN DEPENDENCY, ACHIEVEMENT STRIVING, ORALITY AND ANALITY BASED ON A GROUP OF 23 CHILDREN IN WHICH DEPENDENCY AND ACHIEVEMENT STRIVING MEASURES ARE NEGATIVELY CORRELATED (GROUP A), ON A GROUP OF 20 CHILDREN IN WHICH THESE TWO VARIABLES ARE NOT SO CORRELATED (GROUP B), AND ON A GROUP OF 23 CHILDREN IN WHICH THESE TWO VARIABLES ARE POSITIVELY CORRELATED (GROUP C)

Items	*1*	2	*3*
Part A—Group A ($N = 23$)			
1. Dependency			
2. Achievement Striving	$-.89^*$		
3. Orality	$.61^*$	$-.57^*$	
4. Anality	$.43^\dagger$	$-.50^\dagger$	$.74^*$
Part B—Group B ($N = 20$)			
1. Dependency			
2. Achievement Striving	.27		
3. Orality	−.04	−.07	
4. Anality	−.24	−.34	.35
Part C—Group C ($N = 23$)			
1. Dependency			
2. Achievement Striving	$.90^*$		
3. Orality	.17	.22	
4. Anality	.04	.07	$.49^\dagger$

$^* p < .01$. $^\dagger p < .05$.

significant ($p<.05$ or $p<.01$). The correlations between oral and anal behavior manifestations also increased from .53 to .74 as a result of the controlled inverse relationship between dependency and achievement striving. It can be seen from Table 6, Part B, that none of the relationships in the groups from the two adjacent outer bands are in the predicted directions.

In order to explore whether this procedure has produced higher correlations merely as a function of increased range and greater variability in the middle band, we reversed the direction of the middle band (*see* Figure 2). Inspection of Table 6, Part C, shows that none of our predictions was confirmed when this was done. We feel that the marked effect of an inverse relationship between dependency and achievement striving on the relationship of orality and anality to each makes further research

TABLE 7

COMPARISONS OF PERCENTAGES OF ORAL BEHAVIOR MANIFESTATIONS IN ABOVE AND BELOW MEDIAN GROUPS OF DEPENDENCY AND OF ACHIEVEMENT STRIVING, BASED ON 49 CHILDREN RANGING IN AGE FROM 28 TO 74 MONTHS

	PERCENTAGES				
	DEPENDENCY		ACHIEVEMENT STRIVING		
Oral Behavior Manifestations	Above Median	Below Median	Above Median	Below Median	*Total*
1. Biting	.28	.21	.24	.25	.24
2. Nailbiting	.04	.08	.04	.08	.06
3. Putting objects in mouth	.12	.04	.08	.08	.08
4. Sucking	.32	.42	.28	.46	.37
5. Over-eating	.24	.17	.12	.29	.20
6. Finicking about food	.36	.42	.32	.46	.39
7. Refusing food	.28	.17	.16	.29	.22
8. Wanting to be fed	.08	.13	.04	.17	.10
9. Asking for bottle	.12	.04	.08	.08	.08
10. Manipulating mouth and lips	.24	.08	.24	.08	.16
11. Spitting	.52	.21†	.36	.38	.37
12. Drooling	.20	.04	.08	.17	.12
13. Licking	.24	.21	.12	.33‡	.22
14. Talking like baby	.40	.25	.24	.42	.33
15. Talking nonsense	.44	.46	.44	.46	.45
16. Licking mucus	.08	.00	.00	.08	.04
	$p<.01$		$p<.01$		

NOTE.—Significance of differences (†, ‡) as tested by chi square with correction for continuity ($df=1$), and levels of significance (p) for rank differences on all items based on paired replicate test.

† $p<.05$. ‡ $p<.10$.

desirable to find out more what other factors determine the relationship between dependency and autonomous achievement striving in children.

So far, all findings presented concerning the relationships between dependency – autonomous achievement striving and oral – anal behavior manifestations have been based on total, or summated, scores. We have already reported the results of a detailed analysis of component measures of dependency and achievement striving. Now we shall turn to the outcome of a more detailed analysis of specific oral and anal responses.

Relationships of specific oral and anal behavior manifestations to dependency and autonomous achievement striving. As a first step, we analyzed the relationships of total scores on dependency and of achievement striving to specific oral and anal behavior manifestations. Inspection of Table 7 shows that 12 out of 16 oral responses were noted more often in the above than in the below median dependency group. Whereas only one of these 12 differences, i.e., *spitting*, is statistically significant ($p<.05$) as tested by chi square,[10] the over-all differences on all 16 items as tested by Wilcoxon's paired replicate test (16) are significant ($p<.01$) and in the predicted direction. Of the differences obtained from comparisons of above and below median achievement striving groups on specific oral responses presented in the third and fourth columns of Table 7, 13 out of 16 run, as predicted, in the opposite direction to that found in comparisons between high and low dependency groups. Again, we find that whereas only one of these differences, i.e., *licking*, approaches statistical significance ($p<.10$) the over-all differences are significant ($p<.01$) as tested by the paired replicate test.

When we inspect findings on specific anal responses in Table 8, we find that 67 per cent of above and below median group comparisons yield differences in the expected direction for both dependency and achievement striving. Only the over-all comparisons of high and low achievement striving groups on percentage of anal response are significant ($p<.03$) as tested by the paired replicate test. In summary, we may say that the analysis on specific oral and anal responses bears out our conceptualization and results based on summated scores. Dependency shows a positive relationship to both orality and anality, but only the former is significant. Achievement striving shows a significant inverse relationship to both orality and anality.

Additional aspects emerge from a closer examination of Tables 7 and 8. First, we find that on oral items two out of 32 (6 per cent) and on anal items six out of 18 (33 per cent) specific comparisons approach significance. This might indicate that learning (by association) with respect to orality, which takes place at an extremely early age, is more generalized than learning around anality, which occurs at a later developmental stage and shows more differential relationships of specific anal behavior manifestations

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[10] Based on a two-tailed test with Yates' correction for continuity.

TABLE 8

COMPARISONS OF PERCENTAGES OF ANAL BEHAVIOR MANIFESTATIONS IN ABOVE AND BELOW MEDIAN GROUPS OF DEPENDENCY AND OF ACHIEVEMENT STRIVING, BASED ON 49 CHILDREN RANGING IN AGE FROM 28 TO 74 MONTHS

	PERCENTAGES				
	DEPENDENCY		ACHIEVEMENT STRIVING		
Anal Behavior Manifestations	Above Median	Below Median	Above Median	Below Median	*Total*
1. Lack of bowel control	.20	.25	.08	.38†	.22
2. Spilling	.40	.29	.20	.50†	.35
3. Smearing	.24	.13	.16	.21	.18
4. Messing with clay, paint, sand	.40	.54	.48	.46	.47
5. Playing with water	.48	.46	.48	.46	.47
6. Throwing food or objects	.60	.38‡	.44	.54	.49
7. Avoiding messing	.44	.33	.28	.50‡	.39
8. Avoiding use of toilet	.20	.25	.12	.33‡	.22
9. Using anal words	.76	.50‡	.64	.63	.63
	$p < .21$		$p < .03$		

NOTE.—Significance of differences (†, ‡) as tested by chi square with correction for continuity ($df = 1$), and levels of significance (p) for rank differences on all items based on paired replicate test.

† $p < .05$. ‡ $p < .10$.

to achievement striving. It is further interesting that the two anal responses which approach significance in their positive correlation with dependency overlap with orality—namely, *throwing of food or objects* and *using anal words*. Such a finding lends additional support to our hypothesis of generalization between orality and anality and its effect on the relationship of anality to dependency.

Item Analysis of Oral and Anal Behavior Manifestations

We now turn to a refinement of our dimensions of orality and of anality and to a further exploration of our hypotheses with more internally consistent dimensions of oral and anal behavior manifestations. This will be the last step in the sequence of testing our conceptual framework with increased refinement of our variables.

A first step in our item analysis consisted of determining the contribution of single items to the total score. The procedure consisted of a *t*-test comparison of the mean total oral score for the group of children in whom a given response tendency,[11] i.e., *biting*, was noted with the mean total score of the children in whom *biting* was not noted. The second step consisted of the computation of *phi* coefficients of association for every oral item with all other oral items, and similarly for every anal item with all other anal items. Here, we omitted those items which were noted in less than 10 per cent of the children.

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[11] One was subtracted from the mean score for children with the item in question to remove the contribution of that item to the total score.

TABLE 9

COMPARISONS OF DIFFERENCES (t) AND SIGNIFICANCE LEVELS (p) BETWEEN AVERAGES BASED ON TOTAL ORAL SCORES OF CHILDREN IN WHOM A SPECIFIC ORAL BEHAVIOR MANIFESTATION WAS NOTED (M_1) AND CHILDREN IN WHOM IT WAS NOT NOTED (M_2); THESE FINDINGS BASED ON 49 CHILDREN RANGING IN AGE FROM 28 TO 74 MONTHS

Oral Behavior Manifestations	$(M_1-1)-M_2$	t	p
1. Biting	1.78	2.78	$<.01$
2. Nailbiting	....	....	....
3. Putting objects in mouth	....	....	....
4. Sucking	— .02	— .03	ns
5. Over-eating	1.69	2.20	$<.05$
6. Finicking about food	— .78	—1.18	ns
7. Refusing food	1.56	2.26	$<.05$
8. Wanting to be fed	....	....	....
9. Asking for bottle	....	....	....
10. Manipulating mouth and lips	.91	1.08	ns
11. Spitting	1.65	2.98	$<.01$
12. Drooling	2.24	2.56	$<.02$
13. Licking	2.38	3.92	$<.01$
14. Talking like baby	— .02	— .03	ns
15. Talking nonsense	— .04	— .06	ns
16. Licking mucus	....	....	....

NOTE.—Comparisons not tested statistically on items left blank because the frequency for them was less than 10 per cent in the total group.

Our *t*-test analysis yielded six items which contributed significantly to the total oral score (*see* Table 9). They were *over-eating, refusing food, biting, spitting, licking* and *drooling*. When we intercorrelated all the oral items, we found that all significant *phi* relationships fall either directly among these six items or involve one of them (*see* Table 10). We may therefore conclude that these six oral behavior manifestations constitute the core of our orality measures.

It is of interest to note that all of the six core items are directly involved in oral nutritive behavior. This does not apply to the majority of peripheral items analyzed in this way, namely, *talking like baby, talking nonsense,* and (self) *manipulating mouth and lips.*

A second observation of interest is that the six core oral items occur in earliest infancy, and earlier than at least some of the oral behaviors which

TABLE 10

PHI COEFFICIENTS OF ASSOCIATION AMONG 11 ORAL BEHAVIOR MANIFESTATIONS NOTED IN 49 CHILDREN RANGING IN AGE FROM 28 TO 74 MONTHS

Oral Behavior Manifestations	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1. Over-eating										
2. Refusing food	—.21									
3. Biting	.18	.15								
4. Spitting	.35†	.20	.45*							
5. Licking	.08	.41†	.26	.48†						
6. Drooling	.25	.20	.08	.36†	.69*					
7. Sucking	.14	.00	—.04	—.14	—.11	—.16				
8. Finicking about food	—.30‡	.07	.26	.00	—.13	—.17	.26			
9. Manipulating mouth and lips	—.09	.03	.13	.12	.29	.00	—.11	—.24		
10. Talking like baby	.08	.04	.01	.10	.15	—.13	.01	.07	—.07	
11. Talking nonsense	—.04	.20	.24	.08	.10	.41†	—.18	—.04	.05	—.10

* $p < .01$.   † $p < .05$.   ‡ $p < .10$.

show little intracorrelation. This not only supports an inference made earlier but may in part explain the finding which follows. We find that the high dependency children manifest higher orality on every one of the six core oral items but fail to do so on four of the six other oral items. Thus, the link between dependency and orality, as suggested by Sears *et al.* (13), might be one which is formed very early in infancy.

Another factor which might have bearing on this finding is the extent to which various oral behavior manifestations are involved in "object relations" in the psychoanalytic sense of the term. The core oral items of *refusing food, biting,* and *spitting,* as well as *over-eating* and *licking,* point toward rejection, aggression, greed, and ambivalence in relation to external objects. The other oral items, as for instance *talking nonsense, finicking about food, thumbsucking,* and (self) *manipulating mouth and lips,* point less clearly toward specific relations to objects.[12] This aspect of our finding has considerable relevance for an extensive body of literature which has come out of psychoanalytic clinical studies which have pointed to early oral experiences as essential in the formation of "object relations" and character formation. Our data do not lend themselves for an empirical test or elaboration of psychoanalytic conceptualization in this area. However, most of our core oral items happen to be the ones which relate most consistently to our own dependency measures and their meaning points to various object relations and character traits as was pointed out above. This points toward a sound empirical genetic basis for clinical psychoanalytic observations and inferences. It should also encourage further empirical research with children to determine systematically the formation of relationships between orality, dependency, and specific object relations.

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[12] In fact, thumbsucking, once established, is primarily self- rather than object-related, which may be one of the reasons it fails to relate to dependency and such attempts to extinguish extreme forms of it in children have encountered so much resistance and difficulty.

When we turn to comparisons of above and below median groups of achievement striving, we find the following: the low achievement striving group shows a higher incidence of orality on all six *core* oral items and also on five of the six other oral items. This more generalized but not higher relationship between orality and achievement striving can be explained within our conceptual framework. If low achievement striving were due to complications in evacuation experiences, this might instigate a regression to an earlier level of gratification, namely, the oral level. Regression might extend to a more generalized pattern of responses including both the core oral items as well as the more peripheral ones. We feel that such an explanation could be tested empirically.

When we turn to anal behavior manifestations, we find that *lack of bowel control, spilling, smearing, playing with water,* and *throwing of food or objects* contribute significantly to the total anality score and that *avoid-*

TABLE II

COMPARISONS OF DIFFERENCES (t) AND SIGNIFICANCE LEVELS (p) BETWEEN AVERAGES BASED ON TOTAL ANAL SCORES OF CHILDREN IN WHOM A SPECIFIC ANAL BEHAVIOR MANIFESTATION WAS NOTED (M_1) AND CHILDREN IN WHOM IT WAS NOT NOTED (M_2); THESE FINDINGS BASED ON 49 CHILDREN RANGING IN AGE FROM 28 TO 74 MONTHS

Anal Behavior Manifestations	$(M_1 - 1) - M_2$	t	p
1. Lack of bowel control	1.71	2.65	$<.01$
2. Spilling	1.87	3.67	$<.01$
3. Smearing	1.66	2.32	$<.02$
4. Messing with clay, paint, sand, etc.	.85	.01	ns
5. Playing with water	1.42	2.68	$<.01$
6. Throwing food or objects	2.01	4.39	$<.01$
7. Avoiding messing	.24	.39	ns
8. Avoiding use of toilet	1.24	1.83	ns
9. Using anal words	.57	.94	ns

ing use of toilet approaches that criterion (*see* Table 11). Again, we find that all the highest item intercorrelations involve in every instance one of the five core anal items (*see* Table 12). When we examine the three anal responses which clearly fail to contribute to the total anal score, namely, *messing with clay, avoiding messing* (with clay) and *using anal words,* we find that they belong to responses which are less directly related to the evacuation process than are *lack of bowel control, spilling, smearing* and *avoiding use of toilet.* Finally, high dependency and low achievement striving children show greater frequency of anality on 80 per cent of the core items and on only 50 per cent of the peripheral items.

It becomes clear from our analysis and discussion that the core oral and anal items related more consistently in the hypothesized direction with dependency and achievement striving measures than did the peripheral items.

TABLE 12

PHI COEFFICIENTS OF ASSOCIATION AMONG NINE ANAL BEHAVIOR MANIFESTATIONS NOTED IN 49 CHILDREN RANGING IN AGE FROM 28 TO 74 MONTHS

Anal Behavior Manifestations	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Lack of bowel control								
2. Spilling	.33†							
3. Smearing	.25	.21						
4. Messing with clay, paint, etc.	.08	.00	.19					
5. Playing with water	.08	.09	.29†	.50*				
6. Throwing food or objects	.26	.57*	.17	.31†	.30†			
7. Avoiding messing	.17	.09	.16	—.24	—.24	.06		
8. Avoiding use of toilet	.18	.12	.00	.08	.08	.06	.17	
9. Using anal words	—.00	.11	.25	.04	.12	.23	.09	—.10

* $p < .01$. † $p < .10$.

SUMMARY

The present study was undertaken to investigate the relationships of dependency and autonomous achievement striving to orality and anality in early childhood. A conceptual framework was presented from which particular relationships between these variables could be expected.

The study was carried out on 51 middle and lower middle class children ranging from 28 to 74 months of age. The group included four pairs of twins. Most of these children were emotionally disturbed and all attended a therapeutic nursery.

The data for the present study were collected over a period of 2½ years. Eleven teachers were trained to carry out repeated systematic ratings of dependency and autonomous achievement striving for all of the children in the study. Outstanding oral and anal behavior manifestations were obtained from a content analysis of annual and semiannual summaries by the nursery teachers on every one of the children. Reliabilities for all these measures were computed and reported.

We found that components of dependency on adults were highly intercorrelated in children. The same was found for components of autonomous achievement striving. One component, namely, *seeking recognition,* was consistently less related to the other dependency measures. *Trying to do routines by oneself* was consistently less related to the other components of autonomous achievement striving. The implications of each deviating component from its set were discussed with special emphasis on further research.

The relationships between dependency and autonomous achievement striving were low, whereas oral and anal behavior manifestations were significantly and positively correlated in children.

Dependency was positively related to orality. The relationships between dependency and anality were also positive but weak. Autonomous achievement striving was slightly inversely related to orality. The relationship between autonomous achievement striving and anality was more clearly in an inverse direction. Sex differences, severity of emotional disturbance and twinship affected considerably the above relationships. It was therefore concluded that such variables should be controlled in further research of these relationships in early childhood.

When dependency and autonomous achievement striving were inversely related, the association of each with orality and with anality increased greatly in predicted directions. It was concluded that conditions affecting relationship between dependency and autonomous achievement striving in children need to be further explored.

Detailed comparisons between high and low dependency and autonomous achievement striving groups on specific oral and anal behavior manifestations (a) confirmed our findings based on analyses of summated scores and (b) suggested additional assumptions in our conceptual framework.

An item analysis of oral and anal behavior manifestations yielded in both sets a core of items which correlated significantly with the total scores as well as with other items. These core items seem to be responses which are more directly involved in oral and anal drive reduction than peripheral items. Their relevance for learning studies was discussed. The oral core items seem particularly promising in supplying an empirical basis for further study in "object relations" and in the formation of character types suggested by psychoanalytic clinical experience. Both oral and anal core items showed consistently better relationships to dependency and autonomous achievement striving than did the more peripheral items.

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LEVELS OF ASPIRATION IN PRESCHOOL CHILDREN

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Early childhood is a time of learning a great number of skills, of attempting and practising a multitude of new tasks. In the course of normal development, most children progress at a moderately orderly rate from attempting and mastering first the more simple tasks and then the tasks having more taxing physical or mental requirements. The amount of striving, energy output, and the number of successes and failures experienced by the child during this period staggers the adult imagination. Furthermore, many, if not most, of the new activities tried by the baby and young child are in a very real sense self-chosen. The mother may place the child in a favorable setting for undertaking a new task, and she may try to entice him into new skills, but basically the choice of which tasks he will and will not undertake is the child's own.

There appear to be two kinds of motives for such choices, and for the tremendous amount of striving and sheer endeavor which go on during these early years. First, we can observe what seems to be an intrinsic curiosity about, and desire to master, the external environment. Woodworth (8) has called this the problem of mastery. Achievement of goals, such as walking upright, pulling up to a standing position, or placing a block in a cup, seem to be attended by satisfactions which likely derive from an enhanced view of the self as able to manipulate and control the environment. Young children often make mistakes in judging how much they can accomplish (relation of probability of achievement to ability), but, on

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[1] Both authors formerly of Harvard Graduate School of Education, where this study was done. This study was reported in part at the 1955 meetings of the American Psychological Association in San Francisco.

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the other hand, it is surprising how well they are able to calculate their endeavors in terms of probability of success at the moment. It is a reasonable postulate that the tasks which are self-chosen by the young child are those for which he perceives a good chance of success and also some instrumental gratification in terms of mastery or control over interesting parts of the environment.

A second component appears to be the social facilitation provided when other people observe and react to the child's performances. Approval or adulation from parents is a common reaction to the baby's first steps, and the child may also receive disapproval or punishment for his attempts at new tasks which the parent deems inappropriate for him. Some children become hesitant in reaction to many unfamiliar undertakings, while some appear deliberately to choose to try new tasks at very considerable levels of difficulty. It appears that through observation of the child's free choices of activities when varying degrees of difficulty are present, and of his effort in performance of the chosen activity, we have a good lead into an understanding of the beginnings of achievement motivation.

The level of aspiration technique has been widely employed as a method for study of such achievement-oriented behaviors. Ordinarily, subjects have been required to state verbally a goal or expectation for their future performance. Further, the subjects need to have at least a partial concept of levels of difficulty or a frame of reference for performance on the task. Tasks and techniques for studying aspirations of adults, and children older than eight years, have been rather widely used, but a standard method for study of younger children in this regard has not been so easy to discover. Two studies, those of Fales (3) and Anderson (1), have employed young children as subjects. Fales, who was interested in the developmental aspects of level of aspiration, observed "rudimentary aspirations" in two- and three-year-olds according to whether they accepted or refused help with putting on their wraps. Anderson used three-, five-, and eight-year-old subjects in a ring-throwing task. By various criteria, he found that "maturity" of level of aspiration, by adult standards, increased with age. Interestingly enough, he took the willingness of a subject to risk failure as an indication of a higher development of level of aspiration.

Neither of these studies employed a method which would permit observation and quantification of children's reactions to a variety of unfamiliar tasks. The problem is to develop a procedure in which young children's behavior in a variety of goal-striving situations is reasonably standardized as to forms of expression, is sufficiently explicit to be communicated to an observer, and is quantifiable to the extent that choices and performances can be compared from task to task and child to child. The present study has as its first purpose the development of such a procedure.

Secondly, a test was desired of certain predictions relative to modifiability of aspiration behavior under standard conditions, and of its consistency in individual subjects of preschool age. The child, after he chooses the level of a task for which he will try, can react to the consequent success or failure (achievement or nonachievement of the chosen level) in one of three ways. He may (a) set a still higher goal, (b) choose a lower goal, or (c) maintain the same goal. Following success, responses (b) and (c) are the "safer" ones, that is, they will make future success more probable. After failure, only response (b) increases the likelihood of later success; the other responses put him in line for recurrent failure experiences, provided other factors in the performance sequence remain constant.

It is postulated that the child reacts to this performance situation with motivation deriving from the two types of motivation previously described: the first component of desire for mastery, which instigates levels of endeavor likely to ensure successful performance; and the second component, which provides individual variation in predominant choice of level, depending on the child's experiences in gaining approval or social facilitation for his performances. For example, goal-setting responses may be influenced by the parents' previous treatments of successes or failures, and by their pressures on the child for independence, achievement, or competitiveness. We would expect that the child who has experienced reward for trying new and more difficult activities would react by setting a more difficult goal after success and persisting at the same goal after failure. Gratification has here been attached to achievement at a difficult level; the "success" experience is probably contingent upon this. With fewer rewards of this nature in his experience, the child is freer to choose goals which ensure some achievement with less effort, that is, to operate at the easier levels of tasks.

In the test situations that will be described here, the levels of difficulty were defined for the child in terms of "how many other children can attain" each level, the most difficult being possible for "only a very few children." Thus, the frame of reference given to the subjects was the abilities of a similar group; this is similar to the procedure used by Anderson and Brandt (2) with fifth grade children. Presumably, this frame of reference should influence upward the goal-setting choices of those children who have in the past gained social approval by performing better than the average; children whose parents have not made such comparisons should avoid the difficult tasks on the practical ground that success is less probable at the higher levels.

Further, the attitude of the experimenter, a friendly adult who was constantly present in the situation, was expected to influence the behavior of the children. The attitude adopted for the present experiment was a warm and nonevaluative one; the experimenter's reaction to the child's choices was equally friendly no matter whether their choices were high or low. It was predicted that as the child had continuing experience with this permissive situation, the forces in him which act to inhibit maximum success through repeated goal choices at difficult levels should be relaxed, permitting goal choices which maximize success.

In summary, it was hypothesized that (a) children will generally choose levels of difficulty so as to maximize achievement; (b) there will appear individual differences in the extent to which children elect to try for achievement at more difficult levels; (c) in an experimental situation in which social interaction with the experimenter is friendly and nonevaluaative, it is expected that the child's original achievement pressures will gradually be relaxed so that he will be freer to choose tasks for which success is more likely.

METHOD

There are certain requirements to the selection of tasks and procedures for use in connection with the level of aspiration technique (6). When four- and five-year-olds are to be the subjects, special problems arise in the meeting of these requirements. The tasks must be absorbing and challenging to the children, yet not be ones with which they have had a great deal of prior experience. At the same time, instructions must be simple, and the tasks not so strange that the children cannot comprehend them. Success and failure must be apparent at the conclusion of each performance, and should be perceived by a child as a direct result of his own behavior, rather than as being imposed by definition of the adult experimenter.[3] Finally, the concept of a graduated order of difficulty, in each task, must be learned and transferred from task to task.

To meet the latter requisite, each task in the present instance had five levels of difficulty and each level was given a characteristic color which was the same for every task; for example, the green colored materials were the easiest level of each separate task and red always the most difficult. In addition, the child indicated his choice of level by putting a peg in a peg board which was divided into colored sections representing the five levels of difficulty. The board was carried from task to task and was a common element attached to all the tasks.

The concept of a graduated series of difficulty with different colors standing for different difficulties was introduced to the children by way of a motor task involving large muscle activity: jumping to hit balls hung at varying heights. Here, the child could see, for example, that a red colored ball was the highest of the five colored balls and could "feel" that it was harder to jump for. Attempts to teach the child this concept on tasks having less immediately apparent difficulty gradations were not so successful.

Equipment

Six tasks were devised, each task having five levels of difficulty. The levels were indicated by colors; green being the easiest, then yellow, brown, blue, and red, which was the hardest. The five levels of difficulty were marked by the same colors for each of the tasks.

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[3] Success and failure in this study are defined as the achievement or nonachievement of the goal which the child has previously set for himself.

Task 1—Jumping for balls. Five sponge rubber balls were suspended on strings from a rod hung from the ceiling. They hung in a line, three inches apart. The easiest to reach (green) was just within fingertip reach of the child, and each was hung about three inches higher than the preceding so that the red was the highest and most difficult for the child to reach. The over-all height of the series of balls was adjusted to children of differing heights by raising or lowering the board on which they were fastened. The child was asked to choose the color of the ball which he would try to hit on his jump.

Task 2—Designs. Designs painted on cards in the appropriate colors were copied by the children, using small triangular parquetry blocks. The blocks were also appropriately colored to represent the difficulty level. The intricacy of the designs increased with each level of difficulty. Several series of designs were used so that when a child repeated any given level of difficulty, he could be given another design of the same level and color. The children were given two minutes to complete the design.

Task 3—Pulling weights. Five sash weights, appropriately colored, rode in five vertical tracks ranged a few inches apart along a wall. The top of the track was seven feet above the floor, and the child had to pull the weight from its resting place on the floor to the top of the track by pulling on a rope which rode over a pulley at the top of the track. The weights, in order of difficulty, were approximately 2½, 5, 10, 15 and 30 pounds. This was a very popular task.

Task 4—Light up. This is a commercial toy in which a page of designs with holes in the centers are mounted on a conductor plate so that when two appropriate holes are matched by inserting a metal stylus into each, a circuit is closed and a bulb lights up. The child's task was to find the design which matched the one in which the experimenter had inserted one stylus. The designs varied in difficulty from matching colors, to objects, simple geometric shapes, words, and finally, intricate designs. Each design sheet was appropriately colored, from the green, or easiest sheet, to red which was most difficult, and there were several in each series so that the child could repeat a color choice.

Task 5—Broad jump. Five squares were painted on the floor, green closest to the starting line and red farthest from it. The child had to reach the color of his choice by one jump from the starting line.

Task 6—Remembering. A number of small objects, such as a coin, light bulb, and miniature household objects, were concealed under each of five painted boxes. The child chose a box by naming the color and the experimenter lifted it. The child studied the objects until he announced that he was ready, and then the box was replaced. The child then tried to name the objects from memory. Levels of difficulty were varied by the number of objects under each box, starting with four objects under the green box and increasing by one for each color. Several series were necessary so that the child could repeat a level of difficulty.[4]

Procedure

The child was taken into a room in which all of the tasks were laid out. During the first session the order of tasks was as given above. The experimenter, pointing to the first task, said, "Every game we play has some easy ones and some hard ones. The brown is middling hard. Some children can do it and some can't. Now the blue is harder. Not many children can do it. Red is hardest of all. Just a very few children can do it. Green is very easy. Yellow is next hardest but not as hard as the brown. Do you understand? I wonder which one you are going to choose."

After the child made a choice, he was given the peg board and instructed to insert a peg into the color corresponding to his choice. After the child's performance, the experimenter said, in an nonevaluative manner, "You chose yellow and you got (did not get) yellow. Which are you going to choose next? You can choose yellow again, or brown, or blue, or red, or green." The instructions about the levels of difficulty were repeated several times during each task until it was certain that the child understood the set-up. There were *six trials* in each task.

In the second session, a few days later, the child was permitted to choose his own order of tasks. The directions about the colors and the peg board were repeated, as in the first session.

The child's choices, whether he succeeded or failed, his comments and bodily tensions were recorded by a second observer from behind a one-way screen.

Subjects

The subjects of this study were 19 four- and five-year-old children, 12 boys and 7 girls. The children were enrolled in the Harvard Preschool and came from middle-class, chiefly professional, families.

RESULTS

Choices for Easy or Difficult Levels

A major problem in working with children of this young age is to ascertain that they are indeed reacting to the experimental situation rather than in some fortuitous fashion. If they were behaving randomly, we would expect their color choices to be the chance value (20 per cent) for each color. That this is not the case can be seen in Table 1. During the first session there are more easy and fewer difficult choices than might be expected by chance. The preponderance of easy choices is even more marked in the second session.

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[4] It is our impression that the motor tasks (1, 3, 5 above) were more successful than the other three in involving the children and seeming meaningful to them. Task 2 (designs) did not completely fulfill our criterion that the outcome be apparent as resulting from the child himself, since it was a task timed by the experimenter. However, the children frequently looked at the watch wanting to know how much time was left, so we believe that they took the task seriously. The remembering task could be uncovered to show the children what objects he had forgotten. It appeared that the children, on the whole, were well motivated for all tasks.

TABLE 1

TOTAL CHOICES FOR EACH COLOR

	Session 1		Session 2				
	N†	%	N†	%	σ_{diff}	t	r
Green (Easy) ……	177	27.95	237	35.42			
Yellow …………	150	23.37	164	24.36			
Brown …………	120	18.95	116	17.32			
Blue ……………	108	16.95	82	12.31			
Red (Hard) ……	78	12.16	66	10.16			
Green & Yellow ……	327	51.32	401	59.68	3.33	2.51**	.55**
Blue & Red ………	186	29.11	148	22.47	2.54	2.59**	.49*

* $p < .05$.

** $p < .01$.

† Number of responses. The total possible number per session for all 19 subjects was 684. The total number of choices in this table is less than 684 since subjects occasionally refused to make all 36 choices required in a session.

Shifts with Increasing Experience in the Situation

The percentages of all choices which are green and yellow, that is, at the easier levels of the tasks; and blue and red, the more difficult levels, are presented in the last two rows of Table 1. In the second experimental session, there was a significant mean shift of color choices toward the easier end of the series, and correlatively, away from the more difficult levels. This finding is in keeping with the hypothesis that the children's choices will change in the direction of ensuring more frequent success, when the situation is one that is nonevaluative and without external pressures or rewards for achievement.

We also hypothesized that with increasing experience in this situation the behaviors after success would change so as to maximize attainment of goals. Table 2 gives the proportions of choices upward, downward, and at the same level after success; i.e., after the child has achieved his previously stated choice. In the second session, as compared to the first, there was a significantly greater proportion of successes which were followed by setting a lower goal or rechoosing the same goal. Correlatively, fewer successes in the second session were followed by setting of a higher goal, although in both sessions a higher choice after success was the most frequent response to reaching the previously set goal. In the first session the average number of successes (achievement of aspiration) was 70.89 per cent

TABLE 2

RESPONSES AFTER SUCCESS (ACHIEVEMENT OF GOAL)

	SESSION 1		SESSION 2				
	N	%†	*N*	%†	σ_{diff}	*t*	*r*
Up	237	65.42	219	49.31	4.12	3.93**	.50*
Down	91	23.78	128	29.84	3.10	1.95*	.65**
Same	39	10.74	90	19.68	3.60	2.48**	.30
Successes	451	70.89	519	77.89	2.31	3.03**	.59**

* $p < .05$.
** $p < .01$.
† Percentage of each type of response after success for each subject was calculated with the denominator equal to total number of successes minus the number of tasks whose final responses were successful.

of all the trials, and in the second session, 77.89 per cent, so the changes in goal setting after success actually did result in a greater number of goals being reached.

If the child's purpose, after continuing experience in the level of aspiration situation, is to set goals which he has a high probability of reaching, the most adaptive response to failure is to set a lower goal for the next trial. That this is the most common response to failure in both sessions is seen in Table 3. The session-to-session increase in the proportion of failures followed by setting of a lower goal was in the expected direction, although not statistically significant. Likewise, there was a nonsignificant decrease in the proportion of failures which were followed by the child's setting a still higher goal. The slight, though insignificant, increase in the second session in repeating a choice after failure was contrary to the hypothesis that the child will maximize successes. However, both repetition and going up after failure were rare responses.

TABLE 3

RESPONSES AFTER FAILURE

	SESSION 1		SESSION 2				
	N	%†	*N*	%†	σ_{diff}	*t*	*r*
Up	37	24.17	24	17.15	5.19	1.35	.25
Down	95	63.84	76	66.47	7.18	.37	—.07
Same	15	11.83	18	16.26	4.61	.96	.26
Failures	182	29.11	146	22.11	2.30	3.04**	.60**

** $p < .01$.
† See footnote to Table 2.

Under what conditions will continued experience in a permissive and nonevaluative level of aspiration situation bring about a lowering in the goals set? Jucknat (5), for instance, found that the stronger the success (as judged by the experimenter) the more the subjects tended to increase their levels of aspiration. In the present situation, the external reward for reaching the stated goal was the same regardless of the level of the task at which the child was operating. The pressures to choose the more difficult absolute levels were intrinsic to the child rather than attached to adult approval offered by the experimenter. When these pressures could be relaxed through social interaction in this relatively permissive situation, the child was free to try for the "same" achievement at more likely levels. According to Anderson (1), the tendency for children to change their behavior so as not to risk failure might be interpreted as regression to a lower developmental level, i.e., less stability for possibly internalized parental values toward achievement.

Consistency of Aspiration

A major focus of interest in level of aspiration studies has been the generality, or consistency, of the levels set. Heathers' (4) work has shown that the generality of the level of aspiration is a function of the similarity of conditions under which levels are set. In Tables 1, 2, 3 are reported the correlations between sessions 1 and 2 on color choices, responses to success, and responses to failure.

The children tended to be consistent from session to session in the proportion of easy and difficult tasks they chose (r's of $+.55$ and $+.49$). Also, they were consistent in their responses after success as to the proportion of trials in which they went up or down (r's of $+.50$ and $+.65$). The correlation between the percentage of trials following success in which they chose the same level in the two sessions is .30, which, though positive, is not significant. These four- and five-year-old subjects, then, tended to show consistent responses in the levels of difficulty (colors) which they chose, as well as in the nature of their choices following successful trials.

On the other hand, the subjects showed no consistent pattern of choices from session to session in their choices after failure. One reason for this may be a lower reliability of the failure scores that may have resulted from the fact that there were considerably fewer of them than of the success trials. Secondly, this may represent the common finding that behavior following punishment or failure is more variable than behavior following reward. Sears (7), for example, found that children who had a history of school failure had more widely variable discrepancy scores in level of aspiration situations than did children who had habitual success, and also that induced failure increased variability of aspiration scores.

It is interesting to note that, although the group means for color choices and responses following successful trials changed in a predictable fashion, the individual children tended to retain their relative positions within the group, as shown by the *r*'s. This represents a consistency in behavior over the two experimental sessions.

SUMMARY AND CONCLUSIONS

Nineteen four- and five-year-old children were observed in two sessions of a level of aspiration situation. There were six separate tasks, each of which was graded into five levels of difficulty. The following findings emerged from this study:

1. Children of these ages were able in the first session to discriminate among the levels of difficulty and tended to choose the easier levels of the tasks, i.e., the levels at which success was more probable.
2. The choices of the levels of difficulty and the choices following success changed in the second session in the direction of ensuring more frequent success.
3. The children tended to be individually consistent from session to session in proportion of choices at given levels of difficulty and in their reactions to successful achievement at the level chosen.
4. There were no consistent patterns of responses following failure to achieve a previously set goal.

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THE ROLE OF PRESCHOOL PLAYMATES—A SITUATIONAL APPROACH

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The major emphasis in studies of child development has been upon early family environment. Lately, there has been an increasing interest in the role of school situations in a child's continuing personality growth and behavior patterns. Organized preschool groups, such as nursery schools and kindergartens, have also received some attention. There has, however, been an almost complete ignoring of the fact that the average child spends a considerable part of his time after infancy and before entering school with his playmates—ordinarily drawn from whomever is available to him in close proximity to his own home.

In the informal play group, most children have their first opportunity to mingle with their own age-peers in a relatively unsupervised manner. The play group is a social situation and has, as does any other group, its own specific structure, interactive process and cultural content. The plasticity of the young child, so much stressed in the study of early family influences, still exists during the years of preschool play. It seems rather obvious, then, that the play group must have some importance in directioning a child's development and behavior, and that knowledge of the unique nature of a particular group in relation to that of the particular family from which a child comes may throw some light on understanding that child. This study is devoted to an attempt to discover some possible effects of the play group situation upon child development.

METHODOLOGY

Detailed case records of 50 persons ranging in age from 18 to 54 form the source materials for this analysis. Most of them were in their teens or early twenties. Thirty-four of the cases were female and 16 were male.

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Both whites and Negroes were represented. Social status was predominantly middle class, with a few cases of upper and upper-lower included. The persons were asked to describe their family structure, interaction and culture during preschool days; the structure, interaction and culture of their play group; and their own opinions as to how the combination of the two had affected them, if at all. The foregoing terms were explained carefully to all those participating. Every effort was made to effect informal and clear communication between researcher and cases. In the analysis of the data, more reliance was placed upon the stated facts than in the interpretations, though in most cases the interpretations seemed to follow very logically from the situations as they were described.

FAMILY AND PLAY GROUP STRUCTURE

One of the hypotheses on which this study was based was that the relationships between (a) numbers of siblings and numbers of playmates, and (b) sex of siblings and sex of playmates, might have a bearing upon socialization, sex identification, and ability to understand members of the same, or opposite, sex.

The Factor of Size

Table 1 shows the composition of our sample in respect to number of siblings, and indicates that the cases are very predominantly members of the small family system. Ninety per cent of the respondents come from families with three children or less. Census data for 1950 show the corresponding figure for the general population to be 79.3 per cent. The fact that our sample is a college-attending group very probably accounts for the higher ratio. It is clear, then, that the following analyses are descriptive, chiefly, of the role of the preschool play group for children in the small family system.

TABLE 1

FAMILY SIZE

Number of Siblings	*Male*	*Female*	*Total*
0	7	11	18
1	7	12	19
2	1	7	8
3	0	1	1
4	1	1	2
5	0	1	1
6	0	1	1
Total	16	34	50

TABLE 2

SIZE OF PLAY GROUP OF ONLY CHILDREN

Number of Playmates	*Male*	*Female*	*Total*
1	0	1	1
2	1	1	2
3	2	2	4
4	0	0	0
5	0	1	1
6	0	3	3
7	1	0	1
8	0	0	0
9	2	0	2
10	1	0	1
"a group"	0	3	3
Total	7	11	18

Because the cases who had no siblings at all most strikingly illustrate the relationship between number of siblings and number of playmates, their situations will be considered below. In Table 2, the size of their play groups is tabulated. It indicates a wide numerical range and suggests many varieties of resulting situations, a few of which follow.

Jack, an only child, lived in a neighborhood composed mostly of foundry workers of foreign extraction, though his own family was not of this group. He was not permitted to associate with the children of the workers and when he ran off to do so on several occasions, he was brought home and spanked. There was just one approved playmate within his distance of free locomotion—a girl a year older than he. He admitted that he did not much care to play with her and felt she did not care to play with him, but she was the only available person. His one other playmate was the son of friends of his parents, three years older than he, who lived on the other side of town. Everytime they played together they had to be taken and brought home by parents. This was unsatisfactory, as was the difference in their ages.

Another only child, Bill, lived in a neighborhood which consisted almost wholly of young family people and of college educated parents. Most of the fathers were professional men, the major portion being college and high school teachers. There was a great deal of socializing amongst the parents who had many common interests. Quite naturally, their children grew up together. This boy had no difficulty in finding a continuous play group, easily accessible, from among nine children of both sexes and within one year of his own age.

Horace, a little Negro boy, whose father died when the child was four years old, moved at that time from his home where there had been no playmates available, to live with his mother who was 23; an aunt, 33; and two boarders (a married couple), 24 and 27. Formerly, he had been pampered as an only child and was *the* center of his parents' attention. With the move, he became the lone child "against" four adults, three of whom "took authority" because his mother taught school during the day. He wrote: "Limitations and frustrations began to pile up." He was aware that this could have been a very unhappy situation for him. However, the new neighborhood, by its constitution, enabled this lad to have a supremely happy preschool existence. The community was white middle-class, with just five Negro families of college-educated backgrounds and good economic status. There was no race conflict whatsoever, but a mutual agreement not to mix socially. The five Negro families had a total of 10 children within three years in age of the boy. Their social segregation made them stick together almost clannishly. The boy's need to get out from under adult domination made this group of children exceedingly important to him. He spent most of his day out "with the other kids, learning how to get along with other people." One cannot help but add here how much difference it could have made to the boy had there been no other children of his own race, age and class status available to take a hand in his preschool development of behavior patterns and conceptions of himself as a person.

In three cases of only children, there were other children living in the family. In one, a girl's male cousin one year older than she; in another, a girl's two male cousins, one and three years younger; and in the third, a boy's two cousins, a male cousin four years older and a female cousin three years younger. In the first two of these cases, the roles of the cousins were more like those of real siblings, with the result that there was no feeling of being an only child. Playmates were found together and shared together and there were a number of both sexes. In the third case, the boy was very conscious of being an only child. There was decided rivalry between him and his older boy cousin, because the older boy was permitted to "do things first," and yet was not the real son of the household. The little girl cousin was just a baby and of no use as a playmate. In this case, there was no joining of forces. The lad had to make his own associations, with the result that he found one girl, his own age, to whom he referred as his "sweetheart" and two boys of the same age who never seemed like "real people" to him and of whom he no longer has any distinct recollection.

It was not just the only children who attributed their ease, or lack, of early socialization to the presence or absence of neighborhood playmates. The same sort of comment was made frequently in larger families in cases where the siblings were widely separated in age and/or of different sexes. Here, too, they directly related their own withdrawnness to an isolation from age peers, or spoke with gratitude of the playmates who reversed this tendency in them.

TABLE 3

SEX COMPOSITION OF TWO-CHILD FAMILIES

Sex of Siblings	*Male*	*Female*	*Total*
Same Sex	3	3	6
Opposite Sex	4	9	13
Total	7	12	19

TABLE 4

SEX COMPOSITION OF THREE-CHILD FAMILIES

Sex of Siblings	*Male*	*Female*	*Total*
Both Male	1	1	2
Both Female	0	2	2
Both Sexes	0	4	4
Total	1	7	8

The Sex Factor

The sex composition of the two- and three-child families is shown in Tables 3 and 4, and they indicate that 63 per cent of those children were reared with siblings of the opposite sex. All of the larger families in the sample included children of both sexes.

Table 5 shows the sex composition of the play groups. Sixty-two per cent of them included children of both sexes, a percentage remarkably close to that for the family sex composition.

TABLE 5

SEX COMPOSITION OF PLAY GROUP

Sex of Playmates	*Male*	*Female*	*Total*
Both Sexes	12	19	31
Opposite Sex Only	0	4	4
Same Sex Only	2	9	11
No Playmates	2	2	4
Total	16	34	50

Careful analysis of the nine cases in which siblings were all of the same sex revealed that in six of them the preschool play group afforded first association with children of the opposite sex, and three had no such associations before they entered school. A few comments from the individuals involved throw some light on the meaning, to them, of these structures in their interrelationships.

Ours was a very feminine household, and Mother was dedicated to making little ladies out of us. My older sister and I were even sent to private girls' academies until high school age. My sister had never played with anyone but girls up to that time and when, at the age of 14½, she started at a coeducational school, she got into various sorts of troubles. She was fascinated by suddenly being surrounded by boys who were quite ready to date her. But she didn't know anything about boys, really, nor their rules of the game, nor how to behave with them. The results were that first she got a badly turned head, then she got into trouble with the principal and finally she got her heart broken. She was "off men" for several years. It was so different with me. I went to the same schools at the same ages but I grew up with a gang of boys and girls from the tender age of three. We were together constantly and a little bit of Mother's "femininity training" was rubbed off me even before I went to the academy. Since my friendships with these same playmates continued for many years, I hadn't the slightest trouble in changing to the high school. Boys were "old hat" to me. I had had *their* ideas about proper girls' behavior pounded into me thoroughly and I had also learned a good deal about *them*.

I was the third daughter born to a man who desperately wanted a son. As chance would have it, the only children on my street were a number of young boys. Thus, while other little girls, I suppose, were busy playing with dolls or cut-outs, I was out in the street tossing a soft-ball or climbing lamp posts. The boys accepted me as one of them and I was happy. The "rub" came when I entered grammar school and found myself face-to-face with the problem of learning, under social pressure, How to Act Like a Young Lady. This was indeed quite a problem. It seemed I had to learn, often by painful experience, the behavior patterns which were second nature to other girls. I had to learn what seemed at the time a whole new vocabulary, a whole new manner of dress, a whole new set of interests. It was not easy. I had to learn these things not only to fit in with the other girls, but I discovered, to my pain, that boys prefer tom-boy girls only up to a certain age.

A boy whose only brother was three and a half years younger than he, and who had only one, and a very close and continuing, male playmate, wrote of being "terrified" by being in a classroom with girls, that he never made friends of them and even at present is much more comfortable with men than with women. One sentence from his case record is of special interest. After describing the life-long association with his friend, he wrote, "We were more like brother and *sister*."

The Age Factor

Another hypothesis, arrived at during the process of this study, was that the age structure of the play group is also meaningful in terms of child development. It has already been suggested that the fact of age composition of family and available playmates has some importance where siblings are spaced so far apart as to almost preclude common interests and that in some such cases playmates have proved a satisfactory substitute in sharing, competing, and teaching. There are, however, other facets of the significance of age composition.

First, it seems proper to emphasize that slight age differences between very young children seem much greater than they do between adults. It is a common experience that age gaps increasingly diminish in significance as one grows older. In the case of very young children the facts of maturation and muscular development and control add further highlights to age differences. Even four or six months, when one is three, can make a great difference in actual ability, let alone in interests and in what Mother permits one to do. And a year or two makes a whole world of difference. For these reasons, the age composition of the play group in itself has been noted as important in our records.

A lad with a sister three and half years older than he, and a group of eight playmates from seven to nine years older than he, wrote the following:

> Being younger, and with sister more or less of a boss, I became a follower and a crybaby when I couldn't keep up with the older kids and when they made fun of me. I even developed stuttering but thanks to my mother who didn't sympathize with me, I got over it. She convinced me there was nothing organically wrong with me, that I could stop it if I wanted to. I did try hard and it worked (although under extremely tense situations I feel it coming back but I always suppress it). When my sister was in high school, my parents and she always insisted I go wherever my sister and her friends went (swimming, movies, to other girls' houses). I always felt out of place and not really wanted although everyone said I was very foolish to think such a thing.

A girl with a brother eight years older and a sister four and a half years younger tells this story:

> The only children in the block were about six boys all exactly my brother's age. As a result there was no one for me to play with. But my brother's friends played with me, not regularly, but I was treated to bicycle rides, swings, etc., when they were in the mood. As a result . . . I never had a "till death us do part" bosom pal. I have a hard time talking to other people about things that are important. I enjoy being with myself. Reading is a favorite sport. And I sometimes wonder if the fact that I have always gotten along (on a dating basis) with fellows quite a bit older than I isn't caused by the earlier associations with my brother's friends.

Two other cases (not tabulated in this study) show interesting contrasts to the above. A young lady who is remarkably competent at everything she undertakes, and for the simple reason that she studies each new problem carefully and keeps practicing until she is satisfied with the results, had the following experience. She was the youngest of seven playmates, the next closest in age being six months older. Apparently, the greater motor abilities of the others challenged her. When she was just old enough to dress herself, she was found sneaking out into the yard one morning at six o'clock. When observed and questioned, her explanation was that she was going to"pwactice yumpin'." "Practicing jumping" has been characteristic of her behavior ever since. Finally, an extremely successful businessman, who has made his way by starting a number of times on jobs quite below his ability and economic value and then working himself upward, attributed his willingness to do this to attitudes formed in his earliest training. He had a sister five years his senior. The only other children in the neighborhood were girls of her age, and the little boy who tagged along was an abomination to them. He was very lonely and discovered that the only way he could "get in" was to offer to do the "dirty work" and "play the most menial roles." When he did this, he was not only accepted, but achieved success in his goal for companionship.

Family and Play Group Interactive Processes

In situational analysis the separation of a group into structure, process and content is a necessary technique but a highly superficial one. It is necessary because it is impossible by word of mouth or in writing to analyze a situation in its total configuration. It is superficial because structure, process and content are so completely interrelated that in a real life situation no one of them stands alone as a determining influence. Already, in the analysis of structure, there has been much reference to both interaction and cultural content. This is inescapable. However, as structure has been the chief emphasis in the preceding section, and content will be in the following one, so interaction is stressed here. Three aspects of it will be illustrated.

The Play Group Interactive Pattern

The general patterns of play group interaction in our case records provided interesting contrasts. There were the very congenial ones in which even the parents sometimes helpfully participated when they were required, in which statuses and roles were clearly defined and agreeable to all the children, so that little or no friction resulted in the groups even during competitive play. "We all got along swell" is the tone of comments about such groups. At the other extreme were the play groups that battled incessantly, sticking together, but with a continuous jockeying for statuses and roles. In the records of such groups, the usual comment is something like, "I learned how to stand up for myself. I had to." Between these two polar extremes there was many-shaded mixtures of such interaction. Furthermore, there was one other distinct type: the close-knit group that achieved its closeness from an effort to protect itself against, or take it out upon, a second close-knit neighborhood play group. Interestingly enough, the respondents, both male and female, who recorded this type of interaction spoke of their groups as "gangs." The process described within them was very similar to that described in Thrasher's (2) classic study of gangs, here, pushed back in time to preschool play.

Individual Playmates and the Empathic Complex

Many studies in child development which are psychologically or psychoanalytically oriented stress that early psychic experience in family interaction may result in patterning a child's behavior and attitudes toward all other people and throughout life. For example, the family-rejected child may feel rejected by everyone else and even when he becomes an adult. Such cases do occur, and frequently come to light in clinics. Thus, it is almost natural to attribute the results to family rejection. There are also, though, many obviously family-rejected children who do not react throughout life in this way. They do not usually show up in clinics (at least not for rejection symptoms) and it is therefore very difficult to discover why their reactions have been so different.

A sociological, or situational, analysis of the total interactive group experience, rather than of just early family interaction, may shed light on possible answers to this question and for the following reasons. For some people, the *realities* of their experiences throughout life correspond to, and reinforce, the influences of their intra-family experiences. For others, this is not so; and at times quite abrupt reversals of behavior and attitudes result from new experiences. Our case records give indications that this does happen.

One very persistent story running through the records has to do with the ability, or lack of ability, to form close intimate relationships with other people, to talk oneself out freely, to give confidences. In every case where a child had felt no such closeness with a family member, because of a variety of circumstances, and the play group offered no person of similar age and/or interests, the individual remarked upon a continuation of his "apartness" during school days and a lingering bit of difficulty in this respect up to the present. On the other hand, when the family situation was similar, but close pals had been found in the preschool period, the writer spoke of this as the beginning of learning to share himself with another.

The story, however, is broader than it appears on the basis of these comments. The author has used the concept of "the empathic complex" to describe one of the ways in which personalities take form. The term *empathic complex* means "the particular emotional linkage between a child and the significant persons in his environment" (1). A child does not respond to all the people in his environment with equal emotionality. Some, he loves because they fulfill his emotional and/or physical needs; others, he dislikes because they do not; still others seem neutral persons to him. Regardless of the actual social value of the behavior of these people, a child tends to react in two ways. First, he tends to adopt the behavior patterns of those he loves and to avoid those of the ones he dislikes; second, he tends to develop a certain type of behavior pattern of his own which is appropriate to the relationship between him and the specific person. He is selective about this in his own family, and our cases indicate that he is equally selective amongst his own playmates. For example:

> George had a circle of little friends whom he saw most frequently at birthday parties and Sunday School. Most of them were "neutrals" to him and he rarely sought out their company. Jean, a girl one and a half years older than he, definitely appealed to him, however, and he spent most of his time with her. She was "likeable," came from a "nice middle class family of the same religious background," and "generally set a good example as to her character." Not only was she a "character example" to George, but he felt his association with her carried over into his later life. He prefers the kind of girl Jean was, now that he is at the dating age, and he thinks of girls as friends and not just as "mere objects of sexual attraction." George had a strong emotional feeling about one

> other playmate, Harry. Harry was six months older but a "coward and not too intelligent." His character was "a little shoddy," he always told his parents lies and seldom got away with it. Through Harry, George discovered that "crime does not pay," and he felt that Harry influenced him negatively almost as much as Jean did positively—not because of the actual moral values represented, but just because George happened to like the one very much and despise the other.
>
> In Grace's play group, Mary Louise was her favorite friend. Mary Louise was a year younger, and Grace always felt that she was "taking care" of the younger girl. The relationship was so pleasant and happy for both that when Mary Louise had a baby sister, Grace extended her protective attitude to include the baby. Grace says that she loves young children, likes to work with them, and wants four of her own.

A very similar case record involves a girl whose closest friend was a cripple. They spent a very happy childhood together; the recorder never lost her interest in people with physical incapacities and became a nurse, specializing in orthopedics. This case was in striking contrast to the statement of still a third girl whose next-door neighbor was a victim of paralysis of the right arm. She wrote that she was forced to play with this boy and that his nasty disposition and vicious temper developed through frustration had made her steer very clear of anyone who had any kind of deformity.

Relation Between Family and Play Group Interaction

Finally, the combination of interactive processes within the home and those encountered outside have their own specific effects.

> Gloria writes that she was born when her parents were 39 and 41. Their first baby died at the age of three. They had long since given up any hopes of parenthood before Gloria arrived. When she did, she was the apple of her parents' and kinsfolk's eyes, and very severely overprotected. She describes herself as "sensitive, isolated and hesitant." The children in her neighborhood ran around in a "pack," and were boisterous and active. She wished so much for some one or few quiet children like herself to play with; but she could not become a member of the "pack" and she had no other resources than "imaginary playmates." She wrote, "Now that I have grown up, I realize the advantages of group play. Play is a great builder, not just of bodies and minds, but also of social awareness, for in play a child must take other children into consideration. He learns many valuable lessons in adjusting himself to the demands and ideals of his group as he will later have to adjust himself to the demands and ideals of his community."

Robert, an only child who lived on a large farm, contributed the following record:

> I was quite lonely as a child, in fact, very lonely. My mother was not a talkative woman, and my father was a busy man. There were two groups of children available for me to play with and I was eager to play with them. One was a large family of about eight children. My parents did not think much of the family. The father was irregularly employed. One girl had had an illegitimate child. One boy had been in some kind of trouble. My mother thought they were trash but she also had insight into the loneliness of a little boy. In addition to the social barrier between us . . . I early had to face certain problems. They

cheated at play. They depreciated my superior toys but used them often and broke them. When I got a tricycle, they wanted to ride it all the time but yet it was not a good tricycle. They knew people who had better ones. Also, I envied them. They were a large family. They had a good time, it seemed. There was always somebody to do something with. These children did some petty thieving . . . I remember much talk about it in our home. My father wanted to go to the mat with them, but my mother said she didn't want trouble with them since they were, after all, our nearest neighbors and were the only children usually available for me to play with. About this time, the boy two years older than me began picking on me. My father told me the next time it happened to punch him. I did. I struck him and piled him up on the mud. This made a tremendous and lasting impression on me. He was older, he was a head bigger, yet I learned that fight can overcome what seemed like insurmountable obstacles. I don't think I was ever afraid after that of anyone, at least not for many years. The other thing I remember. These older children gave me my first introduction to sex. The girls as well as the boys joined in. I worried about this for years. The other children that I played with—and always separately from the first family—were my two cousins, a girl and a boy. The girl was a few months younger than I and the boy about a year and a half. The girl and I have always hit it off well together and we ganged up just a bit on the boy. We made him sort of fetch and carry for us. She and I always sort of understood each other and respected each other. Our parents liked each other and there were many happy days when her mother and she came to stay at our house. Then, she and I, and sometimes the boy cousin, ranged all over the place and the fields and played nicely and happily together. The psychoanalysts might well find in my happy play hours with her the development of a deep-seated need which it took many years to fill again. I think that my dual conception of women came from this far back. At six, I was fully aware that there were two kinds, with two different statuses.

CULTURE OF FAMILY AND PLAY GROUP

Two different aspects of the cultural content of family and play group seemed to affect significantly the writers of our case records. One was the similarity or dissimilarity of family culture and play group culture, so far as nativity, religion, race and socio-economic status were concerned. The other was the actual content of play activities within the play groups themselves. This section will be devoted to a brief consideration of each.

The Relationships Between Family Culture and Play Group Culture

Three patterns emerged in the reports on group cultures.

One was that of a child living in a very homogeneous neighborhood in which the values, attitudes, interests and general way of life of all the families coincided. The children attended the same school and, with their parents, the same church. Family, school and church all reinforced each other in the acculturation of the children and in the same manner. It almost goes without saying that the content of the play group was a close reflection of uni-cultural upbringing. There was, of course, some conflict between family and play group, based on "misbehavior" as interpreted by parents. There was little resentment against parents because of this, however, since the children all *knew* what was the approved way to behave and play. They broke the rules sometimes, and they expected to be punished for it. As adults, they commented on "the comfort of cultural consistency," "We always knew where we stood, what we shouldn't do, and what would happen if we did. There was no confusion in our minds." "It was not as if we were children *against* parents or children *against* each other. We all pulled together, amicably, and once in a while us kids would have a spat or decide to kick over the traces." The case of Bill, cited earlier, is an excellent illustration of such a pattern. The whole neighborhood was young, family-minded, social, college-oriented, of similar socio-economic status. Bill, as a college student, still has as his closest friends some of his preschool playmates. Two are classmates at the same university. One is to be best man at his wedding after graduation. Bill is a conscientious, relaxed, self-assured young man, who says, in his own words, that he believes something about the continuities in his group experiences has resulted in making him comfortable and happy.

A second pattern was that in which the neighborhood was culturally divided into at least two distinct groups. Here, the children were "told" with whom they could and could not play. Sometimes they were told by their own parents; at other times, they were rejected by the parents of the children with whom they wanted to play; and again, by those children themselves. The meaning of these divisions to children seemed to depend upon the specific group to which they belonged (high or low status, and majority or minority group) and the availability of playmates whom they liked within their own group. Striking contrasts appeared. Horace, for instance (the little Negro boy who was mentioned formerly), was of minority group status in a sharply divided neighborhood; but he had his own social resources and cultural homogeneity within his own group. Now that he attends a university that is of heterogeneous make-up and liberal attitude, Horace preserves his social separatism of his own accord, with no resentment, and with self-confidence. A Catholic girl, however, who was the only child of her faith and age in a neighborhood divided between Catholics and strong anti-Catholics did not have such a relatively easy adjustment. Under pressure of their parents, the other children rejected her from their play group. She was alone and lonely until her parents finally sent her to a parochial school. There, she found that though her religion was accepted, her person was not. She did not know how to get along with children—only with adults. She favored the Sisters and the Sisters favored her. This strengthened the notion of the other students that she was a "square." She relates that it took her years to find friends of her own age and to get over her hatred of Protestants. Then, there was also the girl, in a divided neighborhood, who was a member of the minority group. This group, however, was superior in socio-economic and educational status to the majority group. Her parents would not let her play with the children in the latter group; but the children in her own seemed "stuffy and cold" to her. She was intrigued by the adventuresome play of the others and was determined to avail herself of it whenever possible. This resulted in constant intrafamily conflict and, during adolescence especially, a very rebellious girl. She is attracted only by peers of whom her parents do not approve and is happy to be living away from home so that she can "get out from under."

The third pattern existed in "neighborhoods" which should not accurately be called by that name. They were found chiefly in urban areas of dense population whose make-up was so heterogeneous that there were few, sometimes no, cultural ties between the individual families. It was as if each family lived on its own cultural island. The play groups consisted of some rather exotic cultural combinations. Parents exerted little or no pressure. The children sorted themselves out. It was under such circumstances that the aforementioned "gangs" emerged even in preschool years. They ranged from the gangs that played tricks on each other, through the ones that vied for play localities and equipment, to several gangs that were surprisingly rough and vicious for children so young. It was in these situations that writers commented variously; "I learned that you had to be rough to make your own way," "It didn't pay to be alone, you needed some pal with you," "I think my fear of tough people stems from those gangs. I always avoid anyone who looks tough," and "My feeling has always been that if you aren't sharp you'll be outsmarted."

Activities Within the Play Group

All of life is a learning process in which each new experience adds to the individual's cultural acquisitions. This is a selective process, however, and each individual learns only certain specific elements, or levels, of the wealth of cultural accumulations in his society. The specific selection is limited by the actual life experience of each person. In the family, the child learns his own family's version of the culture. In the play group, he is immersed in the content of children's activities.

Children's play is a direct reflection of the behavior and knowledge of the adult society. In a simple society, such as a fishing or agricultural tribe, one can fairly easily predict the forms that play will take—there are so few roles, behavior patterns, and forms of activity. In a complex society, this is not so; and the learning process, through play, is much more varied.

This proved to be so with our cases. In group activities the children learned very different modes of behavior during their preschool years. The variations were so many that only a few are selected to illustrate some points on the gamut.

Andy, the five-year-old son of an urban minister, was set upon by the local "gang"—first and second grade boys. They had thought the "minister's kid" would be an easy mark. Andy, however, was wirey and strong, fought back and took his beating bravely. Instead of becoming a scapegoat, he achieved high status among this band of youngsters whose sole activity was composed of devising ways to throw stones at automobiles and through windows without getting caught. Aided by an older gang, some members of which had already become acquainted with the Juvenile Court, the play group taught the minister's son a great deal about the law and its evasion, and the excitement of "getting away with it." Andy says that he is the "black sheep" of his family. In school, he perpetually got into trouble for cheating. He said, "I knew it was wrong, but it's like a game and I get away with it more often than not. Even in college, I was up before the executive committee; but they don't do much to a minister's son."

In contrast:

> Bill, who lived in an education-minded community, reported that most of his preschool play was "intellectual in nature." All the parents stimulated all the children, educationally. In their play, they taught each other the ABC's; how to count; the fundamentals of reading and spelling. When this group started to school together, they were well advanced over the rest of the students. They were soon set apart as the leading student group—academically speaking. They remained so through elementary and secondary school. Bill recognized, as time went on, that he was not exactly a brilliant student. The work became increasingly hard for him. He applied himself very conscientiously, however, because he could not lose his status nor let his clique down. At present, with two members of his preschool group still in his own class, he is devoting all his energies to making "at least a B average," and is quite confident that he can do it.

One girl writes:

> I spent all my days, before I went to school, playing house with my friends. We had dolls, and paper-dolls, and kittens and puppies for the babies. We had all kinds of tiny housekeeping equipment—even a real electric stove on which we cooked real food, and a little hand sewing machine with which we made clothes for our dolls. We bathed our babies, took them for walks in their coaches, fed them (I had a hollow doll that had to be broken open once to remove the decayed food!), and I nursed them when they were sick.

And finally, another girl describes her preschool play in this way:

> We did *everything*. We went "bird watching" in the woods and on nature hunts and we drew what we had seen and collected specimens in albums. We gave our own little Block parties, and sold lemonade in hot weather. We grew plants in egg shells, and in the winter we sledded, built snowmen, and knitted little wool squares for blankets for the Red Cross. We even tried to sell War Bonds, but we weren't very successful at that.

Added Observations

Up to this point, this study has attempted to describe some of the general aspects of child development as influenced by the structure, process and content of the preschool play group situation. It seems pertinent to comment further on two observations made during analysis of the materials.

School Adjustment

Without having been asked to report on school adjustment, 36 out of the 50 cases did so. To them, their school adjustment clearly related to absence or presence of a play group and to the make-up and content of it.

Since this has already been suggested in excerpts from case records, a very brief summary of what they reported will suffice here.

1. When the respondent was older than his playmates and the leader of them, and had only younger siblings, he had to cope with the problem of his "bossiness" in social relations at school.

2. When he was the baby of his play group, and was babied at home, his problems were those of establishing relations of equality among his age peers at school and of not being overly-dependent upon classmates and teachers.

3. The child who had played, in family and neighborhood group, only with children of his own sex found some difficulties in adjusting to schoolmates of the opposite sex.

4. In the case of a child without siblings or playmates, entering a classroom with a number of other children was, usually, "terrifying."

5. The child who was used to playing with others of his own age and of both sexes found the transition to the classroom to be quite easy, as a rule.

6. Finally, the activity-content of the play group, as it prepared the child, or did not prepare him, for participation in school-learning, affected his interest, his status and his adjustment in the school situation.

Changes in Preschool Play Group

Twelve of our cases changed their play group situations with a change of residence during their preschool days. These cases gave added conviction of the meaning of such groups to young children, for all of them mentioned the change as a real life crisis.

In seven of the cases, the move was a great relief. There had been no playmates available, or only wholly unsuitable ones. Here, the move was spoken of as the beginning of better times or better adjustment. In four cases, the writers thought that their parents had made the move with this specific purpose in mind.

The other five cases were not so fortunate. They were "torn up by the roots" from their best friends and constant companions, to find loneliness, bad influences, or, at best, very poor substitutes for what they once had. All five of these mentioned that they could not find satisfactory associations until some time after they started school and got into some kind of amiable group once more.

CONCLUDING COMMENT

This study is presented for its possible suggestive value. The cases concerned are too few to attempt definite conclusions. The thesis is that childhood experience in preschool play groups, though it has been neglected as a field of study, is of real significance in the development of the personality and behavior patterns and that it therefore deserves attention by students of human behavior. The material presented here is one kind of data that may be used for such a purpose.

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THE PARENT-CHILD RELATION AS A SOCIAL SYSTEM: I. PARENT AND CHILD ROLES [1]

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This is the first of a series of papers in which we present an analysis of the parent-child relation from the viewpoint of current role theory and social system theory in the behavior sciences. This approach to interpersonal relations poses a series of questions which are general in nature and which we attempt to investigate specifically in the area of parent-child interaction. The questions about the parent-child relation which we plan to consider are the following: parent and child roles; deviance and control in role performance; effects of participation in other systems; and consistency in role performance.

Previous discussions of the parent-child relation using frames of reference similar to our own include sections in Burgess and Locke (13), Davis (20), Waller and Hill (77), Parsons (47) and studies by Bossard (10, 11). Although we are heavily indebted to this previous work, especially Parsons', it frequently has not been as detailed as one might hope; and that which has been detailed, such as Parsons' analysis, has not utilized available research data in connection with the analysis. In our own study we hope to extend and develop some of the insights presented in these earlier studies.

Our analysis has a two-fold purpose. First, we attempt to restate some of the fundamental issues in parent-child relations in terms of concepts and analytic categories drawn from role theory and social system theory. Secondly, we attempt to relate these concepts and analytic categories to existing research on parent-child relations, both by citing the research when pertinent, and by classifying selected portions of existing research in terms of such concepts and categories.

Two limitations on the extent of our analysis must be made explicit. The first is that we are not concerned with the effects upon the child's or the parent's personality of membership in the parent-child system. Much of the research data which we mention in this analysis, particularly with respect to parent and child roles, is drawn from studies which had as their primary concern the personality of the child resulting from certain types

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of parent-child relations. From such studies we use the information describing the relation, but not the data on effects of the relation.

Secondly, throughout our analysis we are concerned only with the parent-child relation in the United States. We have not included materials from other societies except where they are crucial in illuminating some point of theory. This fact makes it difficult to determine the limits of generality of the analysis. While some of the statements which follow may be true of American families generally, or even of broader groups than this, others may pertain only to specific subcultural groups. Unfortunately, knowledge of this area at the present time is not sufficient to permit clear-cut statements of degree of generality. As a result, we have sought to avoid generalizing unwittingly beyond the limitations of the sample from which the research findings come.

In the analysis that follows we consider the parent-child relation to be a social system in the sense that two individuals interact with each other on the basis of common expectations about appropriate behavior both for themselves and for the other person (47, p. 204).

For every social system, such as the parent-child system, there is some function which is performed for the society at large. Some social systems differ from others in that their primary function for society is training society's members. These include the teacher-pupil, the master-apprentice, and, of course, the parent-child system. In the latter the broad and dominant function is the physical care and training of the child so that he becomes a socially suitable member of society, both as a child in the child's role, and later as an adult performing an adult role. The important distinction between such systems and others is that their major function is to produce, if you will, certain kinds of behavior and attitudes in the member of the system who is being trained. In this type of system it is behavior and attitudes that are the product rather than some type of goods or services.

Surely there are other functions of this particular system for society, but remarkably little analysis has been presented of the functions of the parent-child relation beyond intensive treatment of the dominant function mentioned above. Others have been mentioned, however. For example, it has recently been suggested by Parsons (48) that this relation may provide the opportunity for the adult to work out through play with his children latent conflicts of his own childhood. It has been suggested frequently that involvement in a parent-child relation, i.e., having children, serves to maintain the husband-wife system intact. However, the recent work of Monahan (45) indicates that there may be little relation between childlessness and divorce. For our purposes throughout the analysis we work primarily from the point of view of the dominant function, namely, the rearing of children to produce competent adult members of society.

The basic element in social system analysis is the role of the various members of the system. In every system, each of the members has a certain role which he is expected to perform. Generally, the roles in the system are such that they are complementary to each other, and when competently performed lead to successful discharge of the functions of the system for the larger society. Generally, too, the members have been equipped through prior or in-service training for the proper performance of their roles.

In the analysis of roles, whether for the purposes of research, of making predictions of role effects, of seeking improvement in role performance, and the like, there are several issues which the investigator should consider. Some of these issues would seem to pertain to analysis of roles in any social system. e.g., husband-wife roles, physician-patient roles, while others may be relevant only to the parent-child system. These issues, which we take up in order, are: prescriptive and performance aspects of roles; units of causal sequence used in role analysis; descriptive properties of roles used in analysis; specificity of the role; changes in roles; and, sources of information about roles.

Prescriptive and Performance Aspects of Roles

Every role involved in a social system, like the husband role in the husband-wife system, has some specific duties within the system, some responsibilities to discharge. The content of the role, that is, the feelings one should have, the behavior he should perform, the effects he should produce, are customarily prescribed by society's members for the incumbent of the role. These prescriptions are normative, in that they state what is good or appropriate behavior for a person occupying a certain role in a certain system.

Role prescriptions must be distinguished from descriptions of actual role performance of members of a system. The uses of prescriptive or actual performance information about a role constitute two different ways of defining or describing a given role. Analyses of parental roles, for example, may involve information about how parents actually behave, such as reports by mothers of their infant training practices (61), or information about how parents should behave, such as fathers' prescriptions for their own role (22). Where role data has been used as the predictive variable in studies of children's personality, one finds the investigator customarily using one or the other kind of data, i.e., prescriptive (27) or actual performance data (60). The relative value of using one or the other kind of data in prediction apparently has yet to be established. In any case, the distinction has been sufficiently clear in role analysis so that it probably needs no elaboration.

Two points about role prescriptions, however, merit discussion. First, we would point out that prescriptions for roles in any social system are directed to the successful discharge of the function of that system for society. Role prescriptions essentially are efforts on the part of society's members to regulate the behavior of certain of the members so that certain consequences will occur. It may be clear, then, that role prescriptions are based on theories, implicit or explicit, about human behavior. Role prescriptions include the behavior believed in the society to be the instrumental means to the achievement of some desired result, i.e., the given function of the system. Thus, the parent in our society is charged with the responsibility of behaving towards the child in a way which *it is believed* will result in the child's becoming a competent functioning member of society when adult.

It follows that changes in role prescriptions will occur either when the theory of human nature which underlies the prescriptions changes, or when there is a change in the functions ascribed to the system. Changes in prescriptions resulting from changes in theory are perhaps most clearly shown in analyses (69, 76) of prescriptions for the parental role found in the parent education literature, e.g., the shift from a Watsonian to a Freudian conception of personality contributed to the shift from rigid to self-demand feeding. However, the society generally, not only the expert advisors of parents, also shifts in the general theories. For example, (73), during the first part of the nineteenth century and earlier, the Calvanist view of human nature with its conception of infant damnation and inherent juvenile depravity led to prescriptions for the parental role involving breaking the child's will, among other items. This prescription generally disappeared with the decline of Calvinist theory.

Changes in prescriptions resulting from changes in ascribed function occur because the latter constitutes setting a new goal, so to speak, so that now new means (e.g., new child-rearing practices) are required to reach the new goal. The changes in function of the parent-child system occur within the broad framework of producing competent adults; it is not this over-all charge to the system which changes, but rather the details of what constitutes adult adequacy, i.e., the conceptions of the competent adult. This type of change in relation to changing parent-child role prescriptions evidently has been little studied. Inkeles (30) has analyzed just this type of change for the past two generations in Russia, but for the United States the several analyses of changing conceptions of the valued adult character (55) have not tied the change to changes in the parent-child system. Historical reviews such as Anderson's (2) and Bossard's (11), as well as the references cited in the latter, are generally illuminating but not incisive on this point.

It follows also that conflict in role prescriptions between different groups stems from either different theories of human behavior, or different conceptions of the competent adult to be produced from the parent-child system. So far as we know, differences in role prescriptions between different sub-cultural groups, between mother and father, or parent and child, have not been examined as to whether the differences arise from different theories of how to reach the same end, or different ends, or some mixture of both. This seems to us a provocative line of investigation. There is some indication (50, pp. 201-203) that conflict in prescriptions between various special interest groups, such as the preventive mental health movement, and the society at large arise from differing conceptions of competence in adulthood. Where the general prescriptions for the parent and child roles are tuned to the production of persons competent to perform in the society *as it exists,* requiring perhaps a moderate amount of anxiety, high achievement drive, etc., the prescriptions of special interest groups may be unrealistic in the sense that they are directed not to the existing society's demands. This is not to imply, of course, that society's conceptions of the good adult are better nor that the conceptions of special groups ineffectual. Indeed, it is in part through just such special conceptions and their pursuit that society does change.

A second important issue pertaining to role prescriptions is that of reciprocity. We have mentioned that roles in a social system are mutually cooperative and facilitative in the achievement of the function with which the system is charged. This requires that when a role in the system has some specific prescription, other roles in the system will carry a reciprocal prescription such that the performance of the latter will fit performance of the former. Thus a prescription for a given role, e.g., that parents should make their children obey, conveys at the same time the reciprocal prescription for the child's role, viz.: that children should be obedient. Thus, what is prescribed is truly the relation between roles in the system, even though in statements of prescriptions only one-half is made explicit and is linked to one specific role, while the reciprocal half remains implicit.

Generally, the members of a system know not only the prescriptions for their own roles, but at the same time know the implicit reciprocal prescription for the others' roles. These reciprocals, in fact, constitute some of their role prescriptions for other members of the system. This does *not* necessarily mean that the other members accept these reciprocals as role prescriptions for themselves. Conflict and instability in the system may have resulted in disagreement between members as to appropriate role behavior. What *is* true is that any given member will generally prescribe for others the reciprocal of the prescriptions he holds for his own role. Whether these reciprocals are in fact the prescriptions the other members accept as valid and correct depends on the amount of disagreement between members. Thus, to use our earlier example, a mother may believe she should make her children obey, and reciprocally, that children should be obedient. Whether the children accept such prescription for their own role is another question; they may believe that children should not obey, and reciprocally, that mothers should not make them obey.

In research on parent and child roles the assumption of reciprocity helps to extend our knowledge. For example, in a national survey by Hackett (26) of adolescent prescriptions for parents' behavior, the adolescent response that a parent should not necessarily always give reasons for his demands on the child implies that the adolescent should at times be willing to accept such demands without explanatory reasons. Thus, we have information not only on parental role prescriptions for the adolescents, but reciprocally, information also on prescriptions for the adolescent role itself. The procedure could just as easily be reversed; that is, one might have asked the questions about adolescent roles and inferred the parental roles.

Several studies seem to have made use of the assumption of reciprocity without having made it explicit. For example, in research directed to mothers' "attitudes toward child rearing" (e.g., 27, 35), attitude scales have been used which ask the mother for prescriptions both for parents' and for children's roles, e.g., a parent should . . . , a child should . . . . The items pertaining to the parents and children are not direct reciprocals of each other. Rather, they involve different types of behavior. It is probable that a mother's prescriptions for how a child should behave are as accurate an indicator, given the assumption of reciprocity, of how she feels a parent should behave, as are direct statements about how she feels parents should behave. There is no basis for believing otherwise at the present, and we make this point only to indicate the difference in these two approaches to role prescription data, and the fact that only on the assumption of reciprocity can these two types of items be included in the same measure designed to assess maternal attitudes.

Finally, we will note that reciprocity permits no inferences about actual role performance. The fact that a mother tries to make her children obey is no guarantee that they in fact obey, or even that the mother really expects them to obey—even though she meanwhile believes that she *should* try, and that they *should* obey.

Units of Causal Sequence Used in Role Analysis

We have pointed out how the prescriptions for roles in a social system are based on theories relating the prescribed behavior to discharge of the function ascribed to the system. It is important to discuss now the implications of the fact that such theories, whatever their specific content, seem to include the same theoretical elements, namely, motives of the role incumbent, his overt behavior, and the effects of such behavior. The simple causal sequence of these elements is that motives result in behavior which, in turn, produces certain effects.

The full set of prescriptions for any role usually will be found to include motives, behavior, and effects, all three. For example, consider the instance of the wife's role in which she is supposed to feel love for her husband, is supposed to keep the house clean, and probably also and more subtly, is supposed to make him feel competently masculine. With regard to the parent-child relation the role prescriptions for parents generally include all three causal units: parents should love their children, should feed their children, and should make their children honest.

It is striking that role prescriptions make this attack on all three fronts simultaneously rather than simply specifying one of them. The implication is that the underlying theory has weak predictive power, so that it is not sufficient simply to prescribe appropriate parental motives, for instance, and expect the desired behavior and/or effect to occur; or to prescribe overt behavior, and assume the right effects will follow. Nor, evidently, is it sufficient simply to prescribe in terms of effects and turn the parent loose, without also stating the motives he must have and behavior he must perform to produce these effects. Instead, a global approach is employed in which society protects itself by leaving no element of the causal sequence in doubt. This is shown also in the fact that, in role training generally, the trainee is taught not only the appropriate overt behavior for the role, but is at the same time invested with role-appropriate motives.

The same tri-fold prescription is found in the materials of special interest groups and in the formal legal control system of the society. For the former, for example, a central issue among parent educators is the extent to which overt parental behavior may be suggested in contrast to suggesting appropriate motives, e.g., if you love your child, then your child-training practices will generally be all right. For the latter, the legal structure of the society includes laws prohibiting certain kinds of behavior, e.g., indecent exposure; certain kinds of effects, e.g., killing a person; and, certain kinds of motives, e.g., as in instances of fraud in which the intent to deceive may be the crucial issue.

It is disappointing to find that the research data on parent and child roles does little to clarify this issue. In attempts to classify and describe actual role performance, whether for the purposes of predicting from this (as in effects on the child's personality) or simply to give descriptive information, all three causal units have been employed as a basis of classification without distinction between them, and within the same classificatory system. As Baldwin (5, pp. 267-268) has recently pointed out in his discussion of classifying parental behavior, most efforts are "thoroughly muddled in this respect." Thus, for example, in the Fels Parent Behavior Scales (6, 15, 16, 58) the three types of items are indiscriminately included: solicitousness for child's welfare—anxious–nonchalant (motivational unit); duration of contact with parent—extensive–brief (overt behavioral unit); and, readiness of explanation—thwarts curiosity – satisfies curiosity (effect unit). This same mixed basis of classification is found in other studies of role performance (74), as well as of role prescriptions (56, 57). In fact, the studies which consistently adhere to only one of these causal units in classification, such as the use by Sigel *et al.* (65) of overt behavior alone are notable by being exceptions.

It may be unnecessary to point out that analyses of parent and child roles which have no clear and consistent basis of classification are difficult to compare with each other, and hence to generalize from; and that, moreover, predictive studies of the effects of different types of roles, such as on personality development, might increase their predictive power through clarifying the type of predictive unit involved.

Descriptive Properties of Roles Used in Analysis

Any role analysis requires the use of one or more descriptive properties of the role, such as the amount of aggression shown, the speed of performance, the degree of authority involved, and so on. This is necessary whether one is concerned with prescriptive or performance aspects of roles, and whether the analysis involves motivational, overt behavioral, or effectual units of analysis. Thus, one concerned with motivational aspects may study whether a parent feels (or should feel) acceptance or rejection toward his child (51); or he may be concerned with whether a specific effect is produced (or should be produced) in a child, such as feelings of being intrinsically or extrinsically valued (3); or one may study whether certain overt behavior is (or should be) performed, such as permissive feeding of infants (12). In any case, it is clear that descriptive properties of the role—acceptance or rejection, feelings of valuation produced, permissive feeding practices—are of necessity always involved.

A great variety of descriptive variables have been employed in analysis of parental roles. Most have been formulated in terms of specific theories relating the role property to specifically predicted outcomes (e.g., 60); other properties have been studied because the investigator is interested in exploring their correlates (e.g., 74); still others have been used primarily as a basis for descriptive comparisons of roles among different social groups (e.g., 21).

In some research on parent and child roles the descriptive properties have been carefully measured and scaled and have the properties of dimensions of role behavior (e.g., 33); in other studies the properties involved tend to be single and discrete units of description (e.g., 56, 57); in still others the properties have not received formal measurement (e.g., 1).

A sample of the major properties of parental roles which have been studied is summarized below. It must be noted that similarities or differences in names of the properties studied does not necessarily indicate empirical similarities or differences; often the operational definitions differ even though the name of the property is the same. Among the role properties studied are: traditional–developmental (9, 17, 21, 22); acceptance–rejection (6, 31, 51, 74); dominance–submission (31, 74); democratic–authoritarian (4, 33); autocratic–democratic (36); independence (6); discipline and authority (53); authoritarian practices, and general good judgment (27, 63). Others are warm–cold, possessive–detached (4); nurturance and frustration (60); dictatorial–cooperative, appeasing–temporizing (32); demanding-antagonistic, superficial-encouraging, protective-indulgent (43); and, dominant, possessive, ignoring (64).

When such a variety of variables have been used in areas of study, as in personality research, attempts to order and simplify are often made through factor analysis. However, no major factor analysis of results of several or many of the different scales used in these studies has been made.

There have been two factor analyses of the Fels Parent Behavior Scales. Roff's analysis (58) shows four major factors and three minor ones. The major factors are democratic-authoritarian; rigidness-harshness of punishment; harmony-friction; and overprotective-rejection. Lorr and Jenkins (38), in a second order factoring of Roff's seven factors, find three factors of encouragement or denial of dependency needs; democratic or authoritarian values; and strictness or laxity in the home. A third factor analysis is that of Sewell, Mussen and Harris (62). This study factored correlations between scores on 38 items which pertained to child-rearing practices recommended on the basis of psychoanalytic theory. Among the seven resulting factors were permissiveness in early feeding, permissiveness in toilet training, and non-punitive treatment.

At present, it appears that we have isolated few, if any, properties of the parental role which have gained wide acceptance as to theoretical importance. As the search for important properties continues in studies of parent and child roles, it may be valuable to draw upon more general attempts to classify relations in social systems, such as those developed in sociology during the past 50 years. The recent study of Parsons and Bales (49), in which general theoretical properties of roles in social systems are used to describe roles in the parent-child system specifically, is a notable effort in this direction. Drawing on Bales' analysis of roles in small problem-solving groups and Parsons' general analysis of roles in terms of pattern variables, the roles of mother and father, for example, are delineated in terms of their instrumental (task-oriented) or expressive (social-emotional oriented) properties. It is of interest that, in spite of the continuing interest of sociologists in interaction classification, this is apparently the first major effort to utilize the field of parent-child relations as the empirical content area of interaction. Bringing the analysis of parent and child roles into a theoretical relation with analysis of roles in other social systems, through the use of similar descriptive properties of roles, would have the merit not only of providing new research leads for the parent-child relation, but also of integrating research on the parent-child system with other research in behavior science.

Specificity of the Role

Many of the studies of the parent-child system have analyzed roles of parents, or of children, without any further specification of the role on the basis of sex differences. It certainly is true that there are properties of roles which are shared by both parents, e.g., responsibility for the physical safety of the child, and hence one can speak of the parental role generally. In like manner there are general properties of the child's role, e.g., obedience to the parents. At the same time, it is equally clear that there are specific roles associated with sex differences for both parents and children;

that is, in addition to the general parent and child roles, there are also roles in the system for father and mother, son and daughter. These four roles are fundamental in the monogamous nuclear family characterizing our society (48), even though in other types of families, e.g., polygamous, additional role specifications might be required (37).

Those studies which have in fact studied specific sex roles in the family have rarely taken the next step, namely, specifying the role in terms of same-sex or cross-sex relations. While it is true that there are characteristics of the father role which pertain to the father's relation to both son and daughter, so that one may sensibly speak of the role of the father generally, it is also true that the father's role with respect to his son will differ in several ways from his role with his daughter. The relative absence of solid research on these role differences is all the more surprising in view of the Freudian hypotheses regarding same-sex and cross-sex interaction in the family.

It seems to us profitable to conceive of each type of parent-child relation, such as father-daughter, mother-son, as a separate social system, with the role behavior of members in each system being somewhat different both in prescription and in performance. Each such system is then conceived to be embedded in a more general system, e.g., father and children, which in turn is embedded in the still more general system of parent and child. This is to say that the father's role in the father-daughter system will contain some elements performed only in that system, some performed also in the father-son system, and also some which are performed equally well by the mother in her relation with the children. Indeed, valuable research could be done on the types of role elements which are general or specific. It appears to us that specifying in research the particular social system and, hence, the particular role, would go far toward making the research more comparable and toward increasing the predictive power of generalizations about parent-child roles.

Some of the implications of increased specification of parent and child roles on the basis of sex differences might be illustrated in connection with the Parsons-Bales hypothesis. As mentioned previously, in their recent work (49) the hypothesis was advanced that the father's role in the family was generally that of an adaptive and instrumental person whereas the mother's tended to be integrative and expressive. These two types of roles, one instrumental or task-oriented and the other expressive or concerned with maintaining good interpersonal relations in the system, are found to arise in small problem-solving groups (7). Zelditch (78), in an analysis of 56 societies for which data on the nuclear family were available, found that, on the whole, in 46 out of the 56 societies the mother and father roles were differentiated in this way.

The data on role behavior in American families might be considered briefly in respect to this hypothesis, even though the definitions of instrumental and expressive roles may not be clear enough to enable us to directly relate the data to the hypothesis. In any case, if the instrumental role includes supervision and control of children, then Hackett's finding (26) that mothers are perceived as being more supervising and controlling would be contrary to the hypothesis.

If the instrumental role means being responsible for punishment of children, then both Radke's (53) and Stott's (70) findings that the mother more frequently punishes than the father are relevant.

Moreover, the review of the Chicago and Harvard studies by Havighurst and Davis (28) showed that in the Chicago study mothers punished their children most and the Boston study shows that even when both parents are present the mother more frequently disciplines the child. Data from a national survey (79) indicate that parents are about equal in respect to giving punishment. In sum, the mother is equally or more frequently the punisher or disciplinarian.

If the instrumental role involves putting pressure on the child to live up to standards, then Roy's data (59) finding mothers more permissive is pertinent. In contrast, the study of Connor *et al.* (17) finds the prescribed role for fathers is more developmental than for mothers, and Blood (9) has shown that developmental practices are correlated with permissiveness; and the study by McClelland *et al.* (40) shows that mothers expect independence on the part of their children earlier than do fathers. Thus, two of the three studies indicate mothers may be somewhat more pressuring or demanding than the fathers.

However, the one study which seems to bear most directly on the hypothesis is that of Tasch (75) in which she obtained conceptions of the paternal role from 85 fathers. The types of activities they actually performed in their role as father range from "participating in routine daily care" (94 per cent) to "maintain family unity" (37 per cent), the latter being a fairly clear statement of the expressive role. In their conceptions of the paternal role, "being a guide and teacher" and "acting as the authority" was mentioned 66 and 54 times, respectively, whereas supplying protection, stability, and emotional security were mentioned 28 times only. These data then seem to be a confirmation of the hypothesis.

When both members of the parent-child relation are specified by sex, however, it suggests that instrumental and expressive aspects of parental roles may depend on the specific system being considered. Aberle and Naegele (1) indicate that fathers are more demanding for their sons than for their daughters. The data of Sears *et al.* (60) suggest a tendency of mothers to be a little more severe with daughters than with sons. Tasch's data (75) show that for 72 per cent and 71 per cent of the boys the fathers tried to "develop motor abilities, interests, skills," and "develop intellect," while the fathers did this for 52 per cent and 66 per cent of the girls. In contrast, "routine daily care and safety" was given by fathers to 52 per cent of the boys, and 71 per cent of the girls. These data suggest a greater pressure by fathers on sons than on daughters. McKeown and Chyatte (43) report that girls more often than boys see their father as encouraging. Concerning punishment, the White House survey (79) shows that girls are punished more by their mothers and boys more by both parents. Simpson (66) reports that boys are more often spanked by fathers, girls by mothers. Thus, it may be that interpretation of the data and the general validity of the hypothesis involve a specification of role behavior on a same-sex, cross-sex basis.

There are other bases of specification which are important. One of these is the ordinal position of the child. Even though there are no role prescriptions in our society specifying different parent-child relations on the basis of ordinality (as there are in many societies with primogeniture, for example), it is certain (34) that there are role performance differences on this basis. A second important basis of specification, which has both prescriptive and performance correlates, involves different types of exceptionality of members of the system, e.g., twins, invalid parents, feeble-minded children, deaf mutes, and the like. While a consideration of these lies outside the scope of this paper, we intend to discuss them in a subsequent paper in this series.

SOURCES OF INFORMATION ABOUT ROLES

The next of our issues in role analysis is the source of information. It is desirable that this always be taken into account in the analysis and in subsequent generalization. As we pointed out in the section on role prescriptions, the prescriptions for both parent or child will differ depending on whether one draws upon formal laws, public opinion samples, special interest groups, parents, children, etc. While too much disagreement concerning appropriate role behavior would result in the breakdown of the system's functioning, nevertheless, conflict and disagreement in parent-child relations is evident in that various members of the system do not have identical expectations about what is correct behavior. Even on the descriptive level, the perception of the actual role performance may differ depending on who is reporting. Thus, Radke (53), among others, demonstrates that children and parents disagree in their description of what parents actually do.

CHANGES IN ROLE BEHAVIOR

The fact that both role prescriptions and performance in any parent-child system change through time needs no documentation. Analysis of the process through which roles change is a difficult theoretical problem, and is not germane to our discussion here. What is important is that, recognizing that roles do differ at different stages of the social system, research on parent and child roles should make explicit the ages of the participants in the system.

Classification of Selected Studies of Role Behavior

In Tables 1 and 2 we have classified 40 selected publications from the past two decades which include data on parent or child roles. This is a small number, to be sure; nevertheless, it is a substantial portion of the relevant studies which have had adequate sample size and an orderly presentation of results. One may be surprised, with all of the attention paid to the family and to child development as areas of study, that the research data on parent-child roles is not large. However, as Cottrell (18) has pointed out, sociologists have contributed not nearly as much as might be expected to knowledge of interpersonal relations in the family. And as Radke-Yarrow and Yarrow (54, p. 22) have pointed out in regard to the revised edition of Carmichael's *Manual of Child Development* (14) "out of 1,215 pages of text, less than 25 pages, scattered throughout the book, are given to parent-child relations." Much of the data that *is* available comes from the numerous studies seeking to relate parental role behavior to personality development of the child. Not all such studies, though, actually provide data on parental behavior, so even these are not always pertinent.

Our basis of clasification involves three of the six issues involved in role analysis which were discussed above. Studies are classified according to whether the data concern prescription or performance of roles; the specific type of parent-child relation (e.g., father-children) involved in the study; and the source of information used in the study. Some arbitrary element was involved in placing the studies, but we have tried in all cases to indicate the major emphases in the data presented.

In these tables we have not included as part of the basis of classification the causal units involved in the study, the descriptive properties of the role behavior, or the age of the members to whom the data pertains. With regard to the first, we have already pointed out that almost all studies provide data which are thoroughly mixed in regard to the causal units employed and, thus, they cannot be classified on this basis. We have omitted descriptive properties of roles because the studies are so varied in these properties that classification would involve separate categories for almost each study. Some indication of the descriptive properties involved may be obtained by referring back to the earlier discussion. Finally, we have not included age of participants in the relation because the ages are varied and, as with descriptive properties, would result in an unfruitful expansion of the table. This means that *the studies grouped together in any cell in the table will be a mixed group in terms of the causal units involved, the descriptive properties involved, and the age of the participants in the roles.*

In the tables, the column headings, "Either/Both Child" and "Either/Both Parent," and the same row heading with regard to sources simply indicate that in the data either the sex of the member has not been specified, or the data pertain to or were obtained from members of both sexes. The

TABLE I

ROLE PRESCRIPTIONS AND PERFORMANCE FOR PARENTS

By	EITHER/BOTH PARENT TOWARD			FATHER TOWARD			MOTHER TOWARD		
	Either/Both Child	*Son*	*Daughter*	*Either/Both Child*	*Son*	*Daughter*	*Either/Both Child*	*Son*	*Daughter*
Prescription									
1 Others									
2 Either/Both Parent	36								
3 Father	8, 59, 71			17, 22			17		
4 Mother	27, 35, 59, 64, 68, 71, 72	68	68	17			17, 21		
5 Either/Both Child	39, 53			24			24		
6 Boy	56			26			26		
7 Girl	56			17, 26			17, 26		
Performance									
8 Others	6, 32, 67								
9 Either/Both Parent	51	44	44		79	79		79	79
10 Father	9			25, 53, 75	1, 75	1, 75			
11 Mother	9						19, 41, 53, 61	60	60
12 Either/Both Child	39			29, 53			29, 46, 53		
13 Boy	33			26	43		26		
14 Girl	33			26		43	26		

TABLE 2

ROLE PRESCRIPTIONS AND PERFORMANCE FOR CHILDREN

	EITHER/BOTH CHILD TOWARD			BOY TOWARD			GIRL TOWARD		
By	*Either/Both Parent*	*Father*	*Mother*	*Either/Both Parent*	*Father*	*Mother*	*Either/Both Parent*	*Father*	*Mother*
Prescription									
15 Others									
16 Either/Both Parent	36			44			44		
17 Father	8, 9, 17, 23, 40			1			1		
18 Mother	9, 17, 21, 27, 35, 40, 64, 68, 72	68	68						
19 Either/Both Child									
20 Boy				52			52		
21 Girl	17								
Performance									
22 Others	14, 67			14, 67			14, 67		
23 Either/Both Parent				42, 79			42, 79		
24 Father									
25 Mother									
26 Either/Both Child									
27 Boy									
28 Girl									

row heading "Others" under sources refers to information collected by public opinion samples; observations of behavior, scientific or otherwise; analyses of cultural materials such as laws, folk-lore and the like—that is, information obtained from sources other than specified participants in the parent-child relation.

Sources

In Table 1, Row 1 has no published entries, but would include formal laws regulating parental behavior and representations of the informal norms held by society such as proverbs, child-rearing beliefs, and the like. Many advice books for parents would belong here as prescriptive data, notwithstanding Vincent's study (76) which shows that parent education materials have become less prescriptive than they used to be. We have been unable to find any systematic collection of data pertaining to the generally held prescriptions for parental role behavior.

In Rows 2, 3 and 4 we note only that the several studies in Row 4 which use the mother as a source of information are in the main studies relating mothers' attitudes towards child-rearing practices (which include mothers' beliefs on how parents should behave) to the child's personality or to various antecedents of the attitudes. The data in this cell parallel the data on mothers' prescriptions for children in Row 18, Table 2, e.g., studies 27, 35, 64, 68 and 72. These studies make use of the assumption of reciprocity discussed previously, so that mothers' beliefs about correct parental behavior and correct child behavior are treated as equivalent types of data.

In Rows 5, 6 and 7 we see that the information obtained from the child as source is more specific about the roles involved. These sources include the major surveys of adolescent opinion about desirable parental behavior (26, 56), which contain some of the most extensive data available on role behavior in the parent-child relation. The study by Hackett (26) is primarily concerned with the degree of authoritarianism appropriate for parents. The Remmers and Drucker study (56) is based on a series of items related to mental hygiene, and hence the information involves discrete items rather than dimensions. In Row 8, we have included Spock (67) as a representative of parent education books which give data to parents on how other parents behave. Row 9 includes the major national survey in 1936 by the White House Committee. This study has the merit of including data on specific roles. Row 11 includes the performance counterparts of the numerous prescriptive studies in Row 4, and these studies generally have the same scientific purpose. Here, however, the mother is asked to describe her own behavior and so it becomes specific to her role rather than to parents generally as in the other studies. Rows 12 to 14, which are descriptions of parental performance by children include the study by Radke (53) and the wealth of survey information from Landis and Stone

(33) and from Hackett's study (26) on performance which parallels his prescriptive data in Rows 6 and 7 above.

Turning now to Table 2, Row 15 is similar to Row 1. Included here would be legal prescriptions for children's behavior toward parents, and the informal prescriptive regulations, e.g., "honor thy father and thy mother" which obtain in the culture. Row 18 includes the several studies of mothers' prescriptions for children mentioned in connection with Row 4, and Rows 19 to 21 include the little data on how children believe children should behave towards their parents.

Row 22 is the row which would include most of the child development material, e.g., Carmichael (14), but we wish to state again that the inclusion of such data is questionable since the great bulk of it has little to do with role performance in the parent-child relation. Spock is included here as a representative of parent education books because his data, based on many parental reports and observations of children, are for parents and much of the description pertains to the child's behavior towards his parents. The remaining rows, 23 through 28, show only two studies *describing* youngsters behavior: the White House Conference survey (79) and the Macfarlane (42) research.

Finally, one may note that for the total cell entries, mothers outnumber fathers two to one as sources of information which suggests their greater availability as research subjects.

Prescriptive and Performance Aspects

The data seems about equally balanced on these two aspects of role behavior for parents; there are 39 performance entries, 31 prescriptive. For children, however, there are 10 performance and 24 prescriptive entries, again indicating our lack of information on role performance by children.

Specificity of Role

Several observations can be made about the distribution of data. The first is that the studies classified here apparently provide almost as much information about fathers' role behavior as about mothers', although this is more true for prescriptive than for performance aspects. The common assumption that we are relatively ignorant about fathers in contrast to mothers may be questioned. Second, all of the studies which collected information on role behavior of children of one sex got information on the other also so that we are equally knowledgeable or ignorant, as the case may be, about son and daughter role behavior.

Third, both tables indicate what we have already mentioned: namely, a lack of specificity in the data. Thus, there are studies on fathers' behavior toward either or both children, or on boys' behavior toward either or both parents, but only five of all the studies classified specify the sex of both parent and child.

CONCLUSION

The analysis of the parent-child relation as a social system involves several major areas of theoretical interest. The first of these, the roles of the parent and the child, have been discussed in this paper. We have attempted to formulate a set of issues which are pertinent to the analysis of parent and child roles; we have used these issues to organize our discussion of these particular roles, and have endeavored to relate available research data to these issues as they have been discussed.

A brief appraisal of selected publications of the past two decades on parent and child roles indicates that there has been wide variation in the positions taken in these publications with respect to several of the issues. Thus, studies have been variously concerned with prescriptive or performance aspects of roles, have used often widely differing characteristics of role behavior in the analysis, have varied in the degree of specificity utilized in studying roles, and have further differed in the sources of information drawn upon and in the age of the members in the parent-child system under study. In addition, most of the studies have not been clear or consistent in their consideration and use of motivational, behavioral or effectual aspects of the roles. The result is that many of the findings of studies of parent-child role behavior are not comparable to each other, and it may be also that some of the disagreement in generalizations about such roles arises from this fact.

Increased attention in research planning and in discussion of parent and child roles to analytic issues such as those discussed in this paper should help in subsequent studies to make our knowledge cumulative and more precise.

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TIME AS A VARIABLE IN TRANSPOSITION BY CHILDREN

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An impetus for recent experimental work on the problem of transposition with young children has come from the article published by Kuenne (4) in which she investigated the transposition behavior of "preverbal" and "verbal" children. Subsequent studies have in one instance (1) corroborated Kuenne's findings that "preverbal" children show a decrease in transposition as the test stimuli become more remote from the training stimuli, and that "verbal" children transpose equally well on tests with stimuli adjacent to and remote from the training set. In another study with "preverbal" feebleminded *S*s (9) a decrease in transposition for increasingly remote stimuli was not found.

In an attempt to account for the discrepancy between the latter experiment and the two earlier ones, a difference in testing procedures was noted. In both of the earlier studies testing was begun after a 24-hour delay, while in the third study the test trials followed the training trials immediately. It seems reasonable to assume that the incidence of transposition might vary, depending upon whether the testing is immediate or delayed.

The hypothesis may be advanced that delayed testing will result in a greater frequency of transposition than will immediate testing. The hypothesis is based on the assumption that a delay will increase the difficulty of discriminating between the training and test sets of stimuli, with the consequence that the probability that *S* will show transfer on the test trials will be increased. The present experiment was designed to test the validity of this hypothesis.

METHOD

Subjects

The *S*s were 80 children of CA 3-0 to 3-11 enrolled in nursery schools in Austin, Texas.[1] This age range was chosen so as to obtain a sample of children that would be on the same CA level as the "preverbal" *S*s used

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[1] The children were obtained through the cooperation of the staffs of the All Saints, Austin High School, The University of Texas, A B C, Jack and Jill, and Jeffrey Nursery Schools, and the Austin Kindergarten.

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by Kuenne and Alberts and Ehrenfreund. All of the children of the appropriate CA in the nursery schools were tested. None of the children had previously performed in psychological experiments.

Materials

The equipment consisted of (a) a series of six white wooden blocks, (b) a black tray for presenting the blocks, (c) an opaque black screen which prevented *S* from observing *E* arrange the blocks, (d) animal and flower stickers which served as incentives, and (e) sheets of newsprint on which the children pasted their stickers. The blocks were ¾ in. thick and the areas ranged from 32 to 1 sq. in. The size ratio of each block to the succeeding one was 2 to 1. The screen was attached to the tray so that it could be rotated to hide or reveal the blocks.

Procedure

The *S* was seated in front of the apparatus and was told that a game would be played in which he could find stickers. Several stickers were offered to *S* and after *S* had pasted them on the newsprint, the screen was rotated, revealing the two training blocks on the tray. The *S* was then told: "This is a game we play with blocks. See these two blocks. I'm going to hide a sticker under one of them and I want to see if you can find it." The blocks were then arranged behind the screen for the first trial. The *S* was asked to choose the block under which he thought the sticker had been hidden.

All *S*s were trained with the two largest blocks. The sticker was hidden under the smaller of the two blocks. The positions of the blocks on the board followed a prearranged random sequence of 20 left-right positions. In line with the procedure used in previous studies, 20 training trials were given each day until the criterion of nine correct responses out of 10 consecutive trials was met.

The *S*s were divided randomly into two experimental groups of 40 *S*s each. One group of *S*s was tested immediately after training (Group I) and the other group after a 24-hour delay (Group D). No comment about the change in blocks was made to the *S*s in either group. After reaching criterion, the *S*s in Group D were told that the game would be played again the next day. The instructions were repeated when the children returned.

Four subgroups were formed within each experimental group. Each subgroup was tested with a different set of blocks. In both Groups I and D, 10 *S*s were tested with the blocks one step removed from the training blocks and 10 each with the blocks two, three and four steps removed. In the test trials for the first 10 *S*s, blocks 2 and 3 were used, for the second 10 *S*s, blocks 3 and 4 were used, etc. The smaller of the two test blocks in each set concealed the sticker. The test trials were continued until *S* made four consecutive correct responses. After this, *S* was asked to verbalize the solution of the problem.

RESULTS AND DISCUSSION

Training

The two experimental groups did not differ significantly with regard to CA, sex, or ability to learn the discrimination. The mean CA in Group I was 41.6 months (*SD* = 3.6) and in Group D, 42.0 months (*SD* = 3.7). There were 23 and 24 boys in the two groups of 40 *S*s, respectively. The mean number of trials (excluding the criterion trials) required to learn the discrimination was 14.2 (*SD* = 17.3) in Group I and 13.0 (*SD* = 25.5) in Group D.

The low number of trials required to learn the discrimination merits special attention. There is a striking difference in the speed with which these *S*s learned the discrimination, compared to the speed with which the three-year-old *S*s in the previous experiments learned similar size discriminations. The over-all mean of 13.6 trials is quite different from the mean of 335.7 trials found by Kuenne (4) and that of 54.8 trials found by Alberts and Ehrenfreund (1) for their three-year-old *S*s. None of the *S*s of this age in either of the earlier experiments met the training criterion with no errors. Eight *S*s in the present experiment made no errors and 12 *S*s made only the one error permitted during the first 10 trials by the training criterion.

The results indicate that the speed of learning may be influenced by several factors which differed among the experiments. The ways in which the stimuli were presented differed. In Kuenne's experiment stimulus-squares were mounted on the doors of boxes containing the incentives, and in Alberts and Ehrenfreund's experiment the incentive boxes were fitted with square doors of different sizes. In this experiment the blocks themselves served as the stimuli. The use of blocks may have aided in divorcing the stimuli from a common background and in increasing the degree to which *S*s manipulated the stimuli. This would tend to increase the distinctive characteristics of each stimulus for *S*s and to emphasize their relevance for the solution of the problem. A further difference lies in the fact that the incorrect box was locked in Kuenne's experiment, while in both of the later studies *S*s were able to see that there was no reward following a choice of an incorrect stimulus. It has been found in animal studies that a discrimination is acquired more readily when an incorrect choice is not blocked (5). The rewards used in the three studies also differed. Kuenne allowed the children to play with toys that they found, Alberts and Ehrenfreund used candy as rewards and in the present study stickers were used. A recent study indicates that the nature of the reward may produce significant differences in the ease with which children learn a discrimination (11). The effects on speed of learning of varying the mode of presenting the stimuli and using different types of rewards need to be studied further, but it is clear from the present results that three-year-old *S*s may learn a size discrimination much more rapidly than the early studies indicate.

Transposition

The most commonly accepted measure of transposition is the proportion of *S*s who make the response reinforced in training on the first test trial. The data for the first test response are presented in Figure 1. A decrease in frequency of transposition with increasing separation of training and test stimuli was found in both groups. As predicted, the incidence of transposition was consistently less in Group I. The difference in performance between Groups I and D on the first test trial is significant at between the .01 and .02 levels (one-tailed test). The chi square value is 4.27 ($df = 1$).

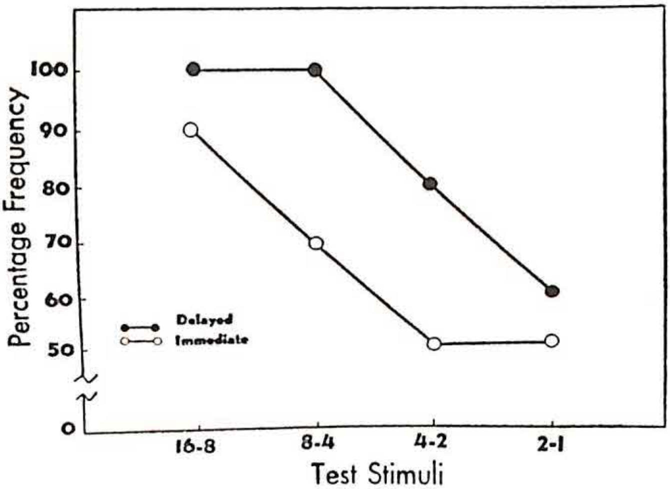

FIGURE 1—The proportion of children giving the "smaller" choices on the first trial, according to test stimuli and time of testing.

A high degree of transfer may be seen in the remarkable rapidity with which the discrimination was learned on the test trials. Excluding the four criterion trials, the median number of trials for Group D was 1 and for Group I it was 1.5. Because of this rapid learning, the differences between the groups found on the first test trial were manifest for only a short period.

An inspection of the curves for the first test trial indicates that the time factor seemed to produce the greatest differences when the stimuli were two and three steps removed. The high proportion of *S*s who transposed with stimuli one step removed may indicate that even with immediate testing, relatively few children discriminated between the sets of stimuli. The low frequency of transposition found in both groups with the stimuli four steps removed may indicate that these test stimuli are so different from the training stimuli that a 24-hour delay is ineffective in reducing the degree to which three-year-old *Ss* can discriminate between the two pairs. The number of cases in each subgroup is so small that the interaction between time of testing and degree of remoteness of the test stimuli cannot be evaluated statistically.

The results of the inquiry made at the end of the experiment revealed that the *Ss* were generally unable to verbalize the principle involved in the problem. Only one *S* in Group D and two *Ss* in Group I were able to verbalize appropriately about the solution of the problem. The remainder of the *Ss* either said nothing, pointed to the correct block, stated they "just knew," or made irrelevant comments.

The greater frequency of transposition following a time lapse is in line with the observations of Köhler (3), and with the results of previous studies with both human adults and rats (7, 10, 12). In the studies with adults (7, 10), as well as in other writings regarding transposition (2, 6), the importance of *Ss*' failure to discriminate between the sets of stimuli has been noted. It is of interest in terms of the discussion presented earlier that in the animal study, time of testing was found to be a significant variable only when an easy problem was used. In a difficult problem, the discrimination of the difference between the sets of stimuli may be so difficult that transposition would be high, regardless of whether a time delay between training and testing is introduced.

There is no provision in the theory of discrimination learning proposed by Spence (8), and espoused by Kuenne (4) and Alberts and Ehrenfreund (1), to account for the present results, and, until more is known about the effects of such variables as time and inter-set stimulus differences on generalization gradients, it is impossible to know whether the theory is capable of providing a satisfactory account for the present results.

SUMMARY

A group of 80 children of CA 3-0 to 3-11 was trained to choose the smaller of two blocks. Half of the *Ss* were tested immediately and half after a delay of 24 hours. Tests were made with pairs of blocks one to four steps removed from the training pair. The discrimination was learned with great rapidity. Transposition was significantly greater for the group tested after the delay.

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AGGRESSIVE BEHAVIOR OF YOUNG CHILDREN IN THE ABSENCE OF AN ADULT[1]

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As the use of controlled play situations takes an increasingly prominent role among approaches to the study of child behavior and development, we are becoming alert to the influence which various parameters of play situations may have on the behavior of the child in play. For example, we have become aware of the relations which may exist between the child's behavior in play and such methodological features as the time of day at which the play session is conducted, the sex of the experimenter, various features of the physical setting of the play session, the familiarity of the child with the play situation, the role relations existing between the child and the experimenter, etc.

The present report, which concerns session differences in children's behavior in a play situation, throws some light on the influence of the adult experimenter on the incidence of aggression and of anxiety and guilt in the course of the child's play. Thus, it concerns the influence on certain aspects of child behavior exerted by one parameter of a play situation: the presence of an adult experimenter.

To date, the research evidence which has been presented concerning session differences in aggression in play has come from studies of doll play. In doll play, a standard technique in which a permissive adult experimenter provides a single child with a set of family toys and encourages fantasy play with them, a number of investigations have demonstrated that typically the amount and the directness of children's aggression in the fantasy play increases with time. Systematic observations of this phenomenon have been reported by several research workers: Phillips (2) found increases in amount of aggression not only in a comparison of first and third play sessions but also in a comparison of the first with the third 20 minutes in a single hour-long session; Pintler (3) observed three sessions of doll play with each of her subjects and found that the average latency time before the first occurrence of aggression was longest for the first session and shortest for the third; P. S. Sears (5) observed both a greater incidence

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[1] This study was conducted while the writer was a research fellow of The Instructional Film Research Program at The Pennsylvania State University, supported by a grant from the Carnegie Corporation of New York. The writer is most grateful to Dr. Ellen Tessman for her generosity in serving as the observer for this study, and wishes to thank C. R. Carpenter, Winona L. Morgan, Robert G. Bernreuter, and Leslie P. Greenhill for administrative support of its execution.

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of aggression and a shorter latency time for aggression in the second of her two doll play sessions with her subjects; and Wurtz (10) compared two sessions of doll play and found that "the attenuation of aggression decreases from session I to session II so that more of the aggression shown in session II is direct than is that in session I" (p. 4).

For an explanation of this repeated finding, various experimenters have pointed to the nature of the adult-child interaction, and specifically to the permissive and non-judgmental behavior which is standard for the adult experimenter in doll play sessions. P. S. Sears asserts that "A possible interpretation of the increase from the first to second session is that the child undergoes a gradual release of inhibition as he discovers the experimenter is not punitive toward his aggression. That is, he possesses instigation to aggression (aggression potential) that is greater than is indicated by the amount of aggressive behavior he displays. As his fear of retaliation dissipates, he increases the frequency of his aggressive behavior" (5, p. 36). R. R. Sears also explains the increase of aggression with time as a function of the child's relation with the experimenter: "The effects of play are cumulative in various ways, and the nature of the child's performance during any given period is in part a function of what experience he has had before. For example, there is ordinarily a latent period before any aggression occurs. The child appears to need this time to test the experimenter's tolerance of aggression. When he finds no retribution, he exhibits hostility with progressively greater freedom. During a half hour of play, there is a continuous increase in frequency of aggressive acts if these are charted for successive five minute intervals" (6, p. 195).

Two empirical findings in Pintler's research support the interpretation that the increase of aggression with time "might indicate a lessening of inhibition on the part of the child, due to the fact that his earlier aggressive actions had met with no criticism from the experimenter" (3, p. 164). The first is that under the experimental condition of high adult-child interaction (which was deliberately permissive and non-judgmental), the latency of aggressive acts was significantly shorter than that under the condition of low experimenter-child interaction. Second, the amount of thematic aggression was significantly greater under conditions of high experimenter-child interaction.

The present study, when examined in the light of those cited, may extend our understanding of the influence of the adult experimenter on incidence of aggression, for it reports changes over time in the incidence of aggression in children's play in the *absence* of any adult.

METHOD

In brief, this study concerns the social play of like-sexed pairs of children, who, in the absence of any adult, spent two sessions in a playroom with standard play equipment. Their play sessions, which were separated by a week, were observed through a one-way vision mirror and were scored for incidence of aggression and of anxiety and guilt. To test for changes with time, the scores of the children for session I are compared with their scores for session II.

Subjects

The subjects in this study were 24 nursery school children, 12 boys and 12 girls. Their ages ranged from 3-9 to 5-1. The children were assigned to like-sexed partners by their nursery school teachers, who were asked to constitute each pair so that the two children would be willing to go with each other and the experimenter to an unfamiliar building for a new experience.

Procedures with the Children

In all but two cases, each pair's two play sessions were separated in time by just seven days. (For one pair, the two sessions were separated by six days, and for one pair the two sessions were separated by eleven days.) To control time-of-day effects, any pair's two sessions were held at the same time of day.

For any session, the experimenter invited the scheduled pair of children to join her in leaving the nursery school to go to another building to see a movie. A short cartoon film was shown in the playroom immediately upon the children's arrival, the experimenter remaining with the children during its showing. (Two films were used for the two sessions, and their order of presentation was counterbalanced so that any observed differences between sessions I and II could not be attributed to systematic film effects.)

After the film, the experimenter informed the children that she had to leave them to do some work in another room, and that they were to remain together in the playroom during her absence. She indicated that the toys in the room were for their play during that period. She said that she would knock on the door before returning to the playroom to terminate their play. This plan was emphasized to them in order to highlight the children's privacy and freedom from adult intrusion or supervision during the play period.

The experimenter then wheeled the film projector from the playroom, closing the door of the playroom behind her. The children remained alone in the room for a period during which they had at their disposal this standard group of toys: two rubber daggers, two lumps of soft clay, two toy telephones, four soft rubber sponges, a plastic tea set and accompanying miniature flatware, seven small toy vehicles, a doll bed containing a doll and bedding, eight inflated balloons, and a large inflated plastic punching toy which stood child-height. The arrangement of the playroom was the same at the beginning of each session.

Unknown to the children, each play session was observed by the experimenter and an observer through a one-way vision mirror. At the conclusion of 14 minutes of scoring the children's play, the experimenter returned to the door of the playroom, where she knocked and waited for an invitation to enter, as she had said she would, and then terminated the play and prepared the children to return to the nursery school. If the state of the playroom provided any evidence concerning the nature of the play during her absence, the experimenter studiously avoided showing any signs of noticing this. Moreover, she responded noncommittally to any efforts by the children to discuss the nature of their play. Like the experimenter's procedures in taking leave of the children at the start of the play sessions, these techniques in terminating the play sessions were designed to insure the children's sense of privacy and freedom from adult supervision during the sessions.

Scoring Procedures

During the sessions, the play of both members of the pair was scored, by an observer and by the experimenter, for level of aggression and level of anxiety and guilt. The two scorers each entered four ratings at every 20-second interval, paced by an electric interval timer. At each interval, each child received two ratings from each of the independent scorers: one for level of aggression in play and one for level of anxiety and guilt. The ratings made at each 20-second interval were on a four-point continuum, ranging from 0 to 3.

A child's total score for any session was the sum of the 42 separate ratings assigned to him by the observer at each interval during the 14-minute period. Each child had two totals for each session, one for each of the variables scored. The experimenter's scores, based on simultaneous but independent rating, were used for assessing the reliability of the observer's scores.

Aggression in play. Each scorer observed the play of each child for "hostile," "destructive," or "aggressive" behavior. Such behavior might be toward the other child, toward a toy, or toward the self. The aggressive behavior might occur in gesture, in facial expression, in words, or in other sounds.

The scorers used ratings of 0, 1, 2, or 3 to denote the intensity of the observed aggression. A rating of 0 was entered for the 20-second interval if no aggression by the child was observed. A rating of 1 was entered if the observed aggression was mild or perhaps playful. A rating of 2 indicated stronger or more forceful aggression in which the child seemed more absorbed. A rating of 3 denoted intense aggression in which the child was highly involved.

In judging intensity, the scorers considered both the quality of the instrumental act and the nature of the goal response: an act might be intensely aggressive because its aim (goal) is highly destructive or hostile, or because its quality of execution (instrumental act) is highly forceful and shows much self-involvement. A scorer's rating of intensity represented the *most extreme* behavior of the child during the 20-second interval, not the average.

The inter-observer agreement in scoring was assessed by comparing the totals from the observer's protocols with those from the experimenter's. The agreement is expressed by the Pearson correlation coefficient, $r = .97$.

This coefficient shows that the two scorers' data on aggression were in unusually close agreement. Possible explanations for this unusually high reliability are presented in (7). That source also reports certain correlates of the aggression scores.

Anxiety and guilt during play. Each scorer observed the play of each child for behavioral signs of anxiety, inhibition, and guilt. The scoring was guided by a list of specific behavioral signs that the child might be controlling, suppressing, repressing, inhibiting, or denying his own aggressive impulses or those of his partner. Included in the list, which was adapted from the work of Ryder (4, pp. 348-349), were these behaviors: escape behavior; tense, stiff, or awkward movements; incompleted or blocked aggressive acts; self-directed hostility; moralistic comments; nervous mannerisms, tics, thumb-sucking; tense facial expression; masklike expression; tense mouth; stuttering or stammering; reparations or restitution; concealment of evidence following aggression; hands over mouth; inactivity; watching the door (for return of experimenter); halting play at sound of footsteps at door.

As was the case with the aggression ratings, a rating of 0, 1, 2, or 3 was entered for each 20-second interval, representing the *most intense* level of anxiety and guilt shown by the child during that period.

The inter-observer reliability of the anxiety and guilt scores, obtained by comparing the totals from the observer's protocols with the totals from the experimenter's, is given by the Pearson correlation, $r = .77$. The lower reliability of these scores, compared with the aggression scores, seems to reflect the greater difficulty of the judgment as well as the fact that anxious and guilty behavior was relatively infrequent in this free play situation and, therefore, the scores of the children were homogeneous, a fact which tends to depress a correlation coefficient.

RESULTS

Session differences in aggression were analyzed by the Wilcoxon matched-pairs signed-ranks test (8, pp. 75-83), a nonparametric test. The scores used in the analysis were each child's aggression totals for session I and session II in the observer's protocols. The scores for session I were found to be significantly larger ($p < .05$), i.e., the statistical test of the data demonstrates that the children showed significantly more aggression in session I than in session II.

A comparable analysis was made of the children's scores for anxiety and guilt in the two sessions. By the Wilcoxon test, the children were shown to have scored significantly higher ($p < .01$) in anxiety and guilt in session I than in session II.

The children's scores on aggression and on anxiety and guilt were correlated: $r = .30$, $p < .05$. This relation reflects the fact that aggression anxiety was emphasized in the ratings of anxiety and guilt, and many of the instances of anxiety and guilt occurred immediately after the commission of aggressive or hostile acts.

DISCUSSION

The finding that aggression (and associated anxiety and guilt) decreases from session to session is directly opposite to the repeated finding (reported in the sources cited earlier) that in doll play aggression increases from session to session. The writer's hypothesis is that this "contradiction" may be explained by the presence of a permissive adult in the doll play sessions and the absence of any adult in the social play sessions of this study.

The evidence of this study, when combined with that from the doll play studies, suggests that the presence of a permissive adult in a play session may have a cumulatively facilitating or releasing effect on children's aggression. Through the processes of reinforcement learning and identification, the young child becomes accustomed to looking to adults for cues as to what behavior is appropriate or acceptable, particularly in a situation which is unfamiliar to him. From a permissive adult's behavior, the child may legitimately conclude that aggression *is* acceptable in a play session, and, therefore, he will give increasing expression to his own aggressive motivation (which is often stimulated by the nature of the situation, e.g., by the presence of provocative toys). In the absence of any adult, however, apparently his own learned standards and controls are relied upon, with the result that after an initial exploratory testing of the limits of the play situation, his play is increasingly reflective of his learned adherence to middle-class and nursery school social standards.

This interpretation, which accounts for the session-to-session *increase* in aggression typically observed in doll play *and* for the session-to-session *decrease* observed in the social play situation of this study, forces a somewhat more positive conception of the result of experimenter permissiveness than might otherwise be held. Lack of fear of punishment is *not* a sufficient explanation of the typical session-to-session increase in aggression in doll play, for in the social play sessions of this study there was no apparent threat of adult punishment, and aggression decreased from session to session. A more adequate explanation seems to be that in the presence of an adult experimenter the young child abdicates superego and ego control functions to him, whereas in the absence of any adult the child's own internalized standards are invoked. This explanation draws upon the psychoanalytic interpretation of the relation between leader and follower (1, p. 146).

An incidental observation in the present study supports the general interpretation being advanced here. Inflated balloons were present in the playroom in all sessions, but in no session was a balloon deliberately broken. Moreover, if the memories of the two scorers serve, only very few children even broached the idea of breaking balloons. Stone (9) has developed a play technique in which the adult experimenter offers the child a graded series of opportunities (permissions) to break balloons. Ryder used this technique in her study with 26 children from four to seven years of age. On the average, four balloons were broken by each child, and only eight of the 26 children broke none at all (4, p. 224). The fact that more than two-thirds of the children broke balloons in Ryder's use of Stone's situation, whereas no children broke balloons in the present play situation, highlights the crucial importance of the adult offers of permission.

The present study and the others which have been cited provide only rough evidence for the interpretation concerning adult permissiveness which has been advanced. We are comparing findings from completely independent researches. More important, we are comparing play situations which differ in other ways as well as in the presence or absence of an adult: They differ in the weighting of fantasy in the play, in the nature of the play equipment presented, and in the presence or absence of another child. All of this means that the interpretation offered here is based on only the grossest sort of evidence, and that it may properly be viewed as an hypothesis which should be tested in a direct comparison of two play situations which differ only in the presence or absence of a permissive adult.

SUMMARY

The social play of like-sexed pairs of children, in a situation free of adult supervision or intrusion, was observed in two sessions a week apart. The incidence of aggression and of anxiety and guilt in play decreased from session I to session II. This finding is opposed to earlier findings concerning session differences in aggression in doll play. The hypothesis is presented that this disparity may be accounted for by the presence or absence of an adult in the play sessions: In the presence of an adult experimenter, young children may abdicate superego functions to him, whereas in the absence of any adult their own internalized standards increasingly restrict expression of unacceptable drives, with a consequent reduction in anxiety and guilt.

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THE RELATIONSHIP OF ANXIETY TO POPULARITY AND REJECTION AMONG INSTITUTIONALIZED DELINQUENT BOYS

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The major purpose of this inquiry was to examine the relationship between anxiety and sociometric status within two groups of institutionalized delinquent boys. Anxiety was operationally defined in terms of boys' performance on a questionnaire (3) relating to manifest anxiety. Sociometric status was defined in two ways: *choice,* an expressed desire on the part of a boy to interact with another boy; and, *rejection,* an expressed desire on the part of a boy to avoid interaction with another boy.

That there is a positive relationship between "adjustment" and sociometric status within child populations has been supported by numerous studies (2, 4, 6, 7, 9). Thorpe's (14) recent investigation of 980 British children, for example, reported that more neurotic children, as measured by a composite index of neuroses, were significantly less popular than the less neurotic children. A study by McCandless (8) and his associates showed that the more anxious youngsters among Iowa elementary school children were also the less popular. Apparently, poor adjustment, high anxiety and neuroticism in a child tends to distort his perceptions of himself and of others (11, 12, 15). Distortions of perception may lead to inappropriate behavior towards others and, hence, to rejection (5).

However, in examining the relationship between adjustment and sociometric status, most investigators (1, 2, 4, 5, 6, 7, 8, 9, 14) studied children who were described as functioning within the range of normal adjustment. An additional question might be asked: In child groups characterized by high anxiety, are the more anxious youngsters also less popular?

SAMPLE

The sample consisted of 63 boys in two cottages at the New York State Training School for Boys, a residential institution for adjudicated delinquents. Thirty-one boys were from one cottage and 32 from the second cottage. Thirty-three boys were Negro, 16 were white and 21 were of Puerto Rican origin. Thirty-seven boys were Protestant, 26 were Catholic. The average length of stay in the cottages was 18.7 weeks with a range of two weeks to eleven months at the time of the study. The average intelligence of the group, as measured by the Wechsler-Bellevue, was 81 with a

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range from 57 to 104. The average age of boys was 13 years, 9 months, with a range of 12 years, 7 months, to 16 years, 11 months.

All boys were from deprived socioeconomic backgrounds and a minority of their families were receiving some form of public welfare assistance at the time of boys' admission to the training school. Sixteen boys were from homes where both the natural mother and father were present; 47 boys were from homes where either the natural mother or father was absent from the home. The two most common reasons for boys' commitment were truancy from school and stealing.

This group of boys was a group mainly in the sense of being together in the same cottage living situations. In the training school a group differs from the usual educational group in that there is constant change: new members are added, old members are lost because of the weekly intake and release procedures. Within each cottage group, boys had organized themselves into cliques; in one cottage there appeared to be some rivalry among cliques.

PROCEDURE

Anxiety was measured by the children's form of the manifest anxiety scale (CMAS). This questionnaire was an adaptation of the Taylor scale of manifest anxiety (13) and was developed by Castaneda (3) and his associates at the Iowa Child Welfare Research Station. The questionnaire consisted of two types of items, 41 anxiety items and 11 lying items (L-scale), which were designed to measure the subject's tendency to falsify responses. Subjects responded to each item by checking either *Yes* or *No*.

Because many subjects were unable to read, it was necessary to modify the standard administrative procedure. Rather than having the subjects attempt to read the questions themselves, as is standard practice, all items were read to the group by this investigator. Instructions given to subjects included only the following: "I am going to read 53 statements to you. Listen carefully. Put a circle around the word *Yes* if you think the statement is true about you. Put a circle around the word *No* if you think the statement is not true about you. Any questions?"

To assess the reliability of the CMAS test, odd CMAS item scores were correlated with even items. The reliability coefficient, corrected by the Spearman-Brown formula, was .78 ($p < .01$). We may assume that the performance of subjects on the CMAS was fairly reliable.

In measuring sociometric relationships, it is often assumed that the least popular member of a group, where only choices are measured, is necessarily the most rejected member of the group. The rationale underlying this point of view is that popularity and rejection are at opposite ends of the same continuum. However, among large institutionalized delinquent groups, this writer has frequently observed that the most popular boy of one clique may, at the same time, be actively rejected by members of other cliques within the same large group. Hence, one boy may be one of the most popular as well as one of the most rejected members of the total group.

For this reason, an attempt was made to study popularity and rejection as separate entities in the hope that a more valid sociometric picture would emerge.

Sociometric choice and rejection data were obtained by direct questioning. All subjects were asked individually: (a) "I want you to give me the names of three boys in your cottage who you feel are your best friends. Give the name of the best friend first, your second best friend second, and the third one last." (b) "I want you to give me the names of three boys in your cottage who you don't like. First name the boy you dislike most, the second most disliked boy next, and the third most disliked boy last. Think carefully before you answer."

Each boy was given both a choice and a rejection score. The choice score was determined by multiplying all first choices received by 3, all second choices received by 2, and all third choices received by one, and summing the products. With this system, the choice scores ranged from 0 to 42.

Rejection scores were determined by a similar system: all first rejections were multiplied by 3, all second rejections were multiplied by 2, all third rejections were multiplied by one; the sum of the several products represented a boy's rejection score. The range of rejection scores was from 0 to 38.

This system for determining choice and rejection status was based upon the assumption that a first choice or first rejection indicated a stronger desire for or avoidance of interaction than a second or third choice.

In addition to anxiety, popularity and rejection, three other variables were studied: length of stay in the cottage to the nearest week; intelligence, as measured by the Wechsler-Bellevue; and the boy's age to the nearest month. These latter data were obtained from the training school's resident psychologist and from official school records.

RESULTS

Anxiety scores ranged from 5 to 37. The mean anxiety score was 20.71 with a sigma of 7.08. It is interesting to note that the delinquent boys expressed significantly more anxiety than the sixth grade, nondelinquent boys of Castaneda's standardization group, whose mean score was only 16.58 with a sigma of 7.39. That the delinquents' mean scores were significantly higher than the nondelinquents may indicate a comparatively high degree of anxiety among the institutionalized delinquent. The mean lying score for the delinquent boys was 5.56 with a sigma of 2.31. There was significantly more falsification among these boys than among Castaneda's sixth-grade boys whose mean and sigma were only 1.84 and 1.63 respectively.

A matrix of intercorrelations among anxiety and six other variables is shown in Table 1. There was no significant relationship between anxiety and any of the variables studied. Lying scores were significantly related to age and intelligence: the older the boy, the greater the tendency to falsifi-

TABLE 1

A MATRIX OF CORRELATIONS BETWEEN ANXIETY AND L-SCALE SCORES, CHOICES, REJECTIONS, LENGTH OF STAY, INTELLIGENCE AND AGE

Variables	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1. Anxiety		.09	—.09	.11	.08	—.13	.10
2. L-Scale			.08	—.17	.09	—.31*	.75*
3. Choices				.75*	.15	—.11	.15
4. Rejection					—.07	—.21	—.04
5. Length of Stay						—.18	.20
6. I.Q.							—.01
7. Age							

* Correlations of .25 and .33 significant at the .05 and the .01 levels of probability, respectively.

cation; and, the less the intelligence, the greater the tendency to falsification. Sociometric choices were positively related to rejection: The boys who were chosen most frequently were the same boys who were rejected most frequently.

It should be observed in Table 1 that choices were significantly related to rejection but that neither was significantly related to anxiety. This question arose: What was the relationship between anxiety and choices and the relationship between anxiety and rejection when the influence of the high relationship between choices and rejection was removed? To answer the question posed, two partial correlations were computed in order to: (a) remove the influence of rejection upon the relationship between anxiety and choice, and (b) remove the influence of choice upon the relationship between anxiety and rejection. The correlation between anxiety and choice, with the influence of rejection removed, was $-.29$ ($p < .05$) which indicates that the more anxious boys were less popular. This finding is in agreement with the previous studies cited (2, 5, 6, 7, 8, 9, 14). The correlation between anxiety and rejection, with the influence of choice removed, was .03 which was not significantly different from zero. The more anxious boys were not rejected more frequently than the less anxious boys.

DISCUSSION

That the boys who were chosen more frequently were also rejected more frequently may seem at least semantically confusing and contradictory. However, this finding should be interpreted in terms of the nature of the groups studied—rather aggressive, delinquent boys. The criteria for acceptance and rejection in any group should vary according to the nature of the group, its mores and prestige values. As Pope (10) has so aptly pointed out, among some low socioeconomic boys, the most popular boy may be "the belligerent domineering lad" (10, p. 383). Aggressiveness, among the institutionalized delinquent, may then be a characteristic which is rewarded by friendship and homage from some boys but produces rejection and resentment from other boys.

The significant negative relationship between sociometric choices and anxiety emerged after the influence of rejection was removed. However, there was no significant relationship between rejection and anxiety when the influence of sociometric choice was partialled out. Apparently, although high anxiety may not be associated with rejection among the institutionalized delinquent, it may hinder the attainment of popularity among such groups. This major finding tends to support the rationale that anxiety, like neuroticism, may tend to distort a child's perception of others and may lead to inappropriate behavior toward others.

That length of stay in the cottage, intelligence, age and the tendency to falsify responses were unrelated to choice and rejection suggests that these characteristics may not be significant prestige factors among the institutionalized delinquent.

The findings of this study should be regarded as tentative due to the limited size of the sample studied, unique characteristics of the institutionalized delinquent, and the validity of the instruments employed. Whether or not the obtained results can be validly generalized to similar or dissimilar adolescent populations is a matter for future research.

SUMMARY

The relationships among anxiety and sociometric popularity and rejection were studied for 63 institutionalized delinquent boys administratively organized into two cottage groups. Anxiety was measured by the children's form of the manifest anxiety scale. The performance of subjects on this test was fairly reliable. Sociometric choice and rejection scores were obtained by direct questioning. Popularity and rejection were considered as separate variables.

The results of this inquiry may be summarized as follows:

1. Popularity was positively related to rejection. The boys who were chosen more frequently also tended to be rejected more frequently.

2. When the influence of rejection was removed from the relationship between anxiety and popularity by partial correlation, there was a significant negative relationship between anxiety and popularity. The more anxious boys were less popular.

3. When the influence of popularity was removed from the relationship between anxiety and rejection by partial correlation, there was no significant relationship between anxiety and rejection. The more anxious boys were not rejected more frequently than the less anxious boys.

4. There were no significant relationships between anxiety and length of stay in the group, intelligence or age of the boy.

5. The tendency of boys to falsify responses on the anxiety scale was unrelated to popularity and rejection, but was related, positively, to age and, negatively, to intelligence.

6. Choices and rejections were not significantly related to length of stay in the group, intelligence or age of the boy.

7. It was suggested that aggressiveness may be a characteristic which is rewarded by friendship from some boys but produces resentment and rejection from others within the same large group.

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MEASUREMENT OF PRE-ADOLESCENTS' VIEWS OF FAMILY CONTROL OF BEHAVIOR[1]

GLENN R. HAWKES, LEE G. BURCHINAL *and* BRUCE GARDNER

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Phenomenological personality theory is based upon the importance of determining how an individual views his world and how he reacts to these perceptions. Hawkes (2) has indicated the importance of applying this frame of reference to the study of interpersonal behavior in the family setting and has described a conceptual framework for research into family influences upon the personal and social development of children. One of the variables he cited was control of behavior. By control of behavior, reference is made to the physical and psychological guides and restrictions which the child perceives as being placed upon him by his parents and other family members.

Measurement of this variable was begun by Hawkes. He conducted extensive interviews with 10-year-old children and found that certain items were productive in obtaining responses about children's views of methods of control used by their parents and the children's evaluation of those methods. Upon the basis of this work, Lewis (4) developed a 56-item questionnaire. After some alterations made by Hawkes, a 58-item questionnaire, referred to hereafter as the Hawkes-Lewis or control scale, was included among the instruments used in a research project carried out in several midwestern states. The purpose of this article is to report the efforts that have been made to refine the Hawkes-Lewis scale.

THE SAMPLE

Since the same design used in this investigation has been described in other sources (1, 3), no detailed description of the sample design is given here. It should be noted, however, that fifth grade classes of children were used as a basis of sample selection. These classes were drawn from rural areas and small towns in Iowa, Ohio, Kansas, and Wisconsin during

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the 1954-1955 school year. All the children present in those classes, 505 boys and 481 girls, completed the Hawkes-Lewis scale. A subsample of 256 children, 129 boys and 127 girls, was drawn from the larger sample. A detailed description of family characteristics of these children has been reported (3).

SCORING THE HAWKES-LEWIS SCALE

Two methods were used to score the scale. One common method of scoring scales is arbitrarily to assign weights to responses in some numerical order, such as 1 to 5, referred to in this article as the judges' weights. But the sample design used in this study also permitted the development of a weighting system based on children's "typical" response selections. The responses of the 730 children not included in the subsample were used to derive a set of "typical" response weights to the items for scoring the scales completed by the subsample of children. Scores determined by this method are referred to as children's weights or scores.

The Judges' Weights

Thirteen competent judges were asked to rank the responses to each item along a continuum from response selections judged to be most conducive to healthful control of the children's behavior to those least healthful. A weight of one was used to indicate the latter response, a weight of five, to designate the former. The mean of the weightings given each response was calculated and the extent of agreement among judges estimated by the average deviation of the mean for each response. The mean average deviation was then determined for the three or five responses for each item. The values for the maximum and minimum degrees of disagreement provided a basis for assessing the actual range of agreement. When the distributions of item mean average deviations were inspected, it was found that the values for five items approached too closely the maximum value to warrant their use.

When the remaining items were inspected, it was noted that, while their weights had a mean average deviation within the limits defined for use, some items still possessed certain undesirable characteristics. For example, there were items with responses which had mean rankings which occurred as two pairs, 1, 3, 3, 4, 4, or three of a kind, 2, 3, 4, 4, 4. Only mean rankings with not more than one pair were tolerated; application of this criterion led to the deletion of 10 additional items. At this stage of evaluation, the scale as scored by judges' weights consisted of 43 items. For scoring the questionnaires by this method, the mean item responses were rounded to the nearest whole number.

The Children's Weights

Before developing the children's weights, differences in responses for boys and girls were tested. The 730 children in the larger sample were

classified by sex, and the number of boys and girls who chose each response for the 58 items was determined. Discrepancies in the frequency of boys' and girls' selections for each item were tested by chi square. Significant differences were found for eight items. For all the other items, the data from boys and girls were combined into a total sample.

The percentage of children (separately by sex for eight items) who checked the responses to each of the items was then calculated. These percentages were converted into single digit whole numbers (0, 1, 2, . . . 9). These weights were then assigned to the responses to the various items and were used to score the scales for the subsample of children. Since the weights were based on the relative frequency of selections of responses by a large number of children, the scores derived by this method may be thought of as a measure of the children's "typicality" of perception of control.

RELIABILITY AND VALIDITY OF THE TWO FORMS OF THE SCALE

An examination of the items comprising the scale indicated that the items might logically be grouped into several subscores. Therefore, 12 competent judges were asked to sort the items into one of three categories: (1) items relating to the child's view of control of his behavior (his report of limitations imposed upon him or conversely his degree of freedom of behavior within the family setting); (2) items pertaining to his reaction to what he reports; and (3) items which do not fit either of the former two categories. It was decided that at least two-thirds of the judges had to agree on the placement of an item for that item to be considered as part of the scale. Subscores were derived on the basis of the items in the first two categories.

The attempt to derive subscores led to the rejection of some items. The scale based on the children's weights was reduced to 47 items while 37 items were retained for the judges' form of the scale.[2] However, retesting of 49 children after an interval of one week revealed reliabilities for the subscores using children's weights of .69 and .73 and, for the scores based on judges' weights, reliabilities of .61 and .74. Total score reliabilities were .85 for each form of the scale. In view of the lower reliabilities of the subscores, it was decided to present only data based on the total scores for each form of the scale.

The validity of the scale can be considered in two ways. A case for the content validity of the scale can be made on the basis of the manner in which the items making up the scale were developed and screened by means of the judges' evaluations. Since all the children in the subsample also completed the Rogers Test of Personality Adjustment (6), there is

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a basis for inferring a type of concurrent validity for the Hawkes-Lewis scale. Four subscores, measures of children's feelings of personal inferiority, social maladjustment, family relationships, and daydreaming or fantasies, and a total score are obtained from the Rogers test.[3] Some association should be expected between the family relationship scores and the scores obtained on the two forms of the control scales. After correction for attenuation, these correlations were $r = -.40$ (control scores based on judges' weights) and $r = -.48$ (control scores based on children's weights). Both correlations were significant ($p < .01$) and both were negative or in the expected direction. High scores on the Rogers test indicate difficulty or maladjustment in relationships, while high scores on both forms of the control scale indicate perception of family control of behavior assumed to be desirable for sound personal and social development of children.

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TABLE 1

SCORES ON EACH FORM OF THE CONTROL SCALE

Sex	*Number*	CHILDREN'S WEIGHTS			JUDGES' WEIGHTS		
		Range	*M*	*SD*	*Range*	*M*	*SD*
Boys	129	78–199	166.7	20.6	77–165	133.8	13.9
Girls	127	112–202	173.9	20.0	99–162	136.6	12.3
Total	256	78–202	170.3	20.6	77–165	135.2	13.2

FINDINGS AND DISCUSSION

The completed Hawkes-Lewis scales for the 256 children were scored on the usable items by each set of weights. The correlation between the scores derived by each method was .75. The scores obtained by the children's weights were based on 10 more items than the scores derived from the judges' weights; when these 10 items were deleted from the children's form of the scale, a correlation of .77 was found between the two sets of scores. After correction for attenuation, these correlations were .88 and .90, respectively.

Mean scores and related statistics as determined for each sex and for each form of the scale are shown in Table 1.

It was necessary to apply different weights for boys' and girls' responses to eight items on the control scale (as based on children's weights). Hence, the possible ranges of scores for boys and girls were slightly different, from 44 to 221 points for the boys, from 40 to 227 points for the girls. The observed minimum score for the boys was lower, 78 as compared with 112 for the girls, but the maximum scores were similar, 199 and 202. The girls' mean was significantly higher by 7.2 points than the boys' mean on this form of the scale, but slightly different weights were used for boys' and girls' responses to eight items. These data indicate that for this form of the scale different means or norms should be considered for boys and girls.[4]

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[3] For definition of the subscores on the Rogers test, see Rogers (6, p. 8) or Remmers and Gage (5, pp. 354-356). Rogers defines the family relations score as measuring the amount of conflict and maladjustment which the child shows in his relations with his parents and siblings. Antagonisms toward parents, jealousies, feelings of being unwanted or dependence are also partially measured by this score.

For the control scales based on judges' weights, the possible range of scores was from 37 to 175. The lowest weight per item was one; the highest weight was four on 10 items and five on the remaining 27 items. On this form, the observed minimum score for the boys was again lower than that for the girls, 77 as compared with 99, but the maximum scores were very similar, 162 and 165. In this case, the difference between the boys' and girls' means was not significant.

The distributions of the scores on both forms of the control scale are negatively skewed. It appears that most of the children studied perceived control of their behavior as nonthreatening or not unduly restrictive. The high mean scores on the judges' form support this view. It is encouraging to observe that most children apparently perceived home conditions relating to the control of their behavior as corresponding to those deemed desirable from a mental health point of view.

SUMMARY

Efforts toward developing a scale for measuring children's perceptions of parental control of their behavior have been described in this article. An original self-administering scale of 58 items with forced choice responses was administered to 986 fifth grade children. Weights based on the frequency of response selections of 730 of these children were used to score the control scales completed by the remainder, a subsample of 256 children. The scale was also scored by a set of judges' weights. Statistical analysis of the judges' ranking of responses and attempts to derive subscores led to the elimination of some of the original 58 items. The final forms of the control scale included 47 items (based on children's weights) and 37 items (based on judges' weights).

Test-retest reliabilities, based on scores for 49 children after a one-week interval, were .85 for both forms of the scale. The validity of each form of the scale was considered in terms of (1) content validity or the manner of the development of the items and their scrutiny by several sets of judges;

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[4] On six items, the maximum weight for the girls was one point higher than for the boys; on the other two items the maximum weights were the same although the weights were arranged slightly differently for the five responses.

and (2) concurrent validity or the correlation between the total scores on the two forms and the scores of the same children on the family relations dimension of the Rogers test of personality adjustment. These correlations, corrected for attenuation, were —.40 (judges' form) and —.48 (children's form).

A significant correlation of .75 was found between the scores derived from the 37-item form of the scale scored by judges' weights and those from the 47-item form scored by children's weights. When scores were determined by each method of weighting based on the 37 items common to both forms, the correlation was only slightly higher, $r = .77$. After correction for attenuation these two correlations were .88 and .90, respectively. These relationships were interpreted as indicating that most of the children studied reported perceptions of parental control of their behavior judged to be desirable from a mental health frame of reference.

Boys' and girls' mean scores based on the judges' weights were not significantly different. Girls scored significantly higher than boys on the form based on children's weights, presumably because different weights for boys and girls were employed for eight of the items making up the scale.

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PRE-ADOLESCENTS' VIEWS OF SOME OF THEIR RELATIONS WITH THEIR PARENTS[1]

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Previous research has indicated that boys, in various ways, tend to be more critical or less satisfied with their home conditions and their relations with their parents than girls (2, 4, 11). There is also evidence to support the hypothesis that children feel closer to their mothers or tend to rate their relationships with their mothers in a more favorable manner than similar relationships with their fathers (2, 4, 8, 11, 12). Data were recently gathered which permitted retesting these two sets of findings. While the studies referred to above were conducted with urban children or young adults, the present investigation was based on a sample of rural and small-town children. These data are given in the present report in the form of children's responses to some of the items included in the Hawkes-Lewis scale (6). Detailed descriptions of the sample design and methodology used in this investigation have been described elsewhere (1, 7). It should be noted that the sample included 730 fifth grade children from Iowa, Ohio, Kansas, and Wisconsin.

In the present report, the children's responses to various questions are organized to provide data in regard to three questions: (1) To what degree do children report that they are involved in family activities? (2) Are there any differences in boys' and girls' views of their relationships with their parents? (3) Are there any differences in the children's ratings of various characteristics of their mothers and fathers?

FINDINGS

Responses to eight questions, listed in abbreviated form in Table 1, may be considered as estimates of the children's views concerning their involvement in the activities of their families. In the order listed in Table 1

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these questions were: "How much do your parents discuss with you what your family is going to do?" "Does your family talk over plans together?" "How much do you help in choosing things to eat when you go to the grocery store with your parents?" "Do you help decide what clothes to buy for yourself?" "Are you praised when you do a job well at home?" "Are you thanked for doing little extra jobs at home?" "Do you have regular jobs to do at home?" "Do you think that you have too many jobs?"

Boys' and girls' responses to each question were tabulated separately, but, since none of the differences was significant, responses for the total sample of children are listed in Table 1. Variations in the number of responses in this table and subsequent tables are due to the failure of some children to answer some of the questions or the inappropriateness of a question for some children, e.g., where a parent was deceased or where a child had no siblings.

TABLE 1

CHILDREN'S RESPONSES TO QUESTIONS ABOUT THEIR INVOLVEMENT IN FAMILY ACTIVITIES

		RESPONSES (PERCENTAGES)				
Questions	*N*	*Always*	*Often*	*Sometimes*	*Seldom*	*Never*
Parents discuss with you	730	21	35	30	10	4
Family talks over plans	730	25	24	37	10	4
Choose things at store	730	9	22	40	20	9
Help decide what clothes to buy	730	18	26	40	10	6
Praised for doing a job well	730	25	25	35	10	5
Thanked for doing extra jobs	730	48	25	19	5	3
		Yes		*Usually*		*No*
Have regular jobs	728	72		18		10
Too many jobs at home	728	6		5		89

From the responses listed in Table 1, it is apparent that the children see themselves as involved in types of family decision-making activities and work about the house. They also reported that much more often than not their parents recognized their work efforts and thanked them for doing extra jobs.

Significant differences in boys' and girls' responses were found in relation to four questions listed in Table 2. These questions were: "How often do you talk over your plans with your mother?" "How much does your mother talk over with you the reasons why you are punished?" "Are your parents too strict with you?" "Are your parents more strict with you than

TABLE 2

BOYS' AND GIRLS' RESPONSES TO QUESTIONS ABOUT RELATIONS WITH THEIR PARENTS

		RESPONSES (PERCENTAGES)					
Questions	*N*	*Great deal or always*	*Much or often*	*Some or sometimes*	*Little or seldom*	*None or never*	*C Test of Difference*
Talk over plans with mothers							
Boys	368	22	27	30	17	4	5.152**
Girls	352	39	28	21	9	3	
Mothers talk over reasons for punishment							
Boys	368	16	29	26	21	8	1.630*
Girls	351	22	27	29	13	9	
		Yes		*Usually*		*No*	
Parents too strict with you							
Boys	374	6		11		83	2.012*
Girls	355	5		6		89	
Parents more strict with you than other children							
Boys	344	12		20		68	3.394**
Girls	316	8		11		81	

* Significant at the 5 per cent level.

** Significant at the 1 per cent level.

with other children in your family?" For these statistical tests and those in subsequent tables, Marshall's *C* was employed (3, pp. 553-555; 10).

Two inferences appear warranted on the basis of the percentages listed in Table 2. First, the vast majority of boys and girls reported that they "always," "often," or at least "sometimes" talked over their plans with their mothers. It was also apparent that, in the view of the majority of the children, mothers were much more likely than not to talk over with them the reasons why they were punished. Only a small proportion of the children reported that their parents were too strict with them or stricter with them than other children in their families. However, it also was clear that boys felt their parents were stricter with them than did girls. Girls reported that they talked over their plans with their mothers more than did boys. Girls also felt that their mothers talked over reasons for punishment more than did boys. Differences in boys' and girls' responses for frequency of talking over plans with their fathers or the degree to which fathers talked over the reasons why they were being punished were not significant. These percentages are listed in Table 3.

In addition to observing possible differences in boys' and girls' responses to various questions, it was also possible to test differences in the children's responses to identical questions pertaining separately to their mothers and fathers. It already has been noted that for two questions related to mothers, statistically significant differences were found between boys' and girls' responses. Therefore, boys' and girls' responses were kept separate for comparing the responses of the children to these questions pertaining to each of their parents. Only those children who answered the questions for both parents have been included in these analyses and, hence, the numbers in Table 3 are slightly lower than those reported in the other tables.

TABLE 3

BOYS' AND GIRLS' RESPONSES TO QUESTIONS ABOUT THEIR RELATIONS WITH THEIR MOTHERS AND FATHERS

		RESPONSES (PERCENTAGES)					
Questions	*N*	*Great deal or always*	*Much or often*	*Some or sometimes*	*Little or seldom*	*None or never*	*C Test of Difference*
Boys: talk over plans with							
Mothers . . .	369	22	27	30	17	4	
Fathers	369	23	24	26	19	8	4.029**
Girls: talk over plans with							
Mothers . . .	343	38	29	21	9	3	
Fathers	343	21	17	29	23	10	7.794**
Boys: talk over reasons for punishment							
Mothers . . .	360	16	28	27	21	8	
Fathers	360	14	25	28	21	12	1.749*
Girls: talk over reasons for punishment							
Mothers . . .	342	22	27	29	13	9	
Fathers	342	15	25	28	19	13	3.070**

* Significant at the 5 per cent level.
** Significant at the 1 per cent level.

An interesting feature about the percentages listed in Table 3 is that mothers were uniformly rated more favorably by the children than fathers. Boys reported that they talked over their plans slightly more with their mothers than fathers. Boys also reported that their mothers were slightly more likely to talk over the reasons for their punishment than were their fathers. The girls' responses were in agreement with the patterns described for the boys, but the differences in the ratings for mothers and fathers were much larger than observed for the boys. It should be noted that both boys and girls tended to choose the "always" and "often" responses more frequently than the "sometimes" or the "seldom" and "never" responses for all the questions. Hence, both parents were rated favorably, but mothers more so than fathers.

Responses for five other questions that were repeated for each parent are listed in abbreviated form in Table 4. Since the discrepancies in boys' and girls' responses to these questions were not significantly different, percentages for the total sample of children are listed. These questions were: "Does your mother keep her promises with you?" "Does coaxing help you to get your mother to change her mind?" "Are you punished when you

TABLE 4

CHILDREN'S RESPONSES TO QUESTIONS ABOUT THEIR RELATIONS WITH THEIR MOTHERS AND FATHERS

		RESPONSES (PERCENTAGES)					
Questions	*N*	*Great deal or always*	*Much or often*	*Some or sometimes*	*Little or seldom*	*None or never*	C Test of Difference
Keeps promises with you							
Mother	719	54	23	18	4	1	.167
Father	713	48	26	18	5	3	
Coaxing changes their minds							
Mother	717	5	14	43	23	15	3.134**
Father	714	5	12	35	27	21	
Are you punished for disobeying your							
Mother	721	17	23	41	13	6	.304
Father	716	20	23	36	13	8	
Gets angry when punishes you							
Mother	718	10	18	42	22	8	.423
Father	713	11	17	39	21	12	
		Yes		*Usually*		*No*	
Easy to get along with							
Mother	719	74		21		5	3.347**
Father	716	67		25		8	

** Significant at the 1 per cent level.

disobey your mother?" "Does your mother get angry when she has to punish you?" "Is your mother easy to get along with?" Identical questions were repeated for fathers.

While mothers were rated as "easier to get along with" than fathers, only a very small proportion of the children said that either their mothers or fathers were not "easy to get along with." About three-fourths of the children indicated that their mothers or fathers were "easy to get along with." Apparently coaxing was more successful with mothers than with fathers, but only 19 per cent of the children indicated that coaxing "always" or "often" resulted in getting their mothers to change their minds. Seventeen per cent of the children checked similar categories for the same questions about their fathers. The children's responses indicated that mothers and fathers were about equally likely or unlikely to keep their promises with them, punish them for disobeying, or become angry while punishing them. Only about one-fifth of the children indicated that they were "seldom" or "never" punished for disobeying their parents. Almost three-fourths of the children reported that their mothers and fathers "always" or "often" kept their promises with them and only small percentages of the children, 5 per cent for mothers and 8 per cent for fathers, checked "seldom" or "never" for these questions. When the children were asked about the frequency with which the parents expressed anger while punishing them, the modal response was "sometimes" for both fathers and mothers.

When the results of Tables 3 and 4 are combined, it appears that the children, as a group, report fairly satisfactory relations with their parents, but that mothers are rated in a slightly more favorable manner than fathers.

Summary

A sample of 730 fifth-grade children responded to a number of questions about their involvement in family activities, treatment in their homes, and relations with their parents. At the risk of overgeneralizing, several inferences may be drawn from the reports obtained from the children. For the most part, the children chose responses which indicated that they were involved to a considerable degree in family activities, and were reasonably well satisfied with their treatment in their homes and with their relations with their parents. Data from the four tables included in this report furnish the basis for this statement. Boys' and girls' responses listed in Table 2, however, indicated that boys as compared with girls reported less satisfactory relations with their parents. These results are in agreement with the findings of other researchers who found that boys were less satisfied with or more critical of their relations with their parents than girls (2, 4, 11).

Although the children gave favorable ratings to both of their parents for questions pertaining to a number of characteristics of the parents, mothers were seen in a more favorable manner for some characteristics by both boys and girls. Other researchers have also found that children tend to feel closer to their mothers or rate their mothers more favorably for various characteristics in comparison with their fathers (2, 4, 8, 11, 12).

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CHILDREN'S ATTITUDES TOWARD PEERS AND PARENTS AS REVEALED BY SENTENCE COMPLETIONS

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Students of child behavior generally believe that a child builds attachments to his parents as a result of their ministrations to him, and that he builds favorable attachments to other children in terms of pleasant and reinforcing experiences had with them. Observational studies of social behavior have sketched some detail within this general picture. Young children play together freely and select best friends regardless of sex. As children grow older there arises an increasing tendency to regard with favor one's own sex peers and with disdain, if not enmity, members of the opposite sex. This trend breaks down only during adolescence when both biological drives and the social setting favor heterosexuality. This period of increasing interest in and association with members of the opposite sex merges with the period of courtship and mate selection which society has institutionalized in various ways.

Along with the growing interest in the peer group and as the child develops skills and independence, there is a waning of interest in the parent figures. This is said to be particularly noticeable in early adolescence, when a period of antagonism or, indeed, outright conflict with parents occurs. This conflict is resolved by parents readjusting their expectations of the children and according more freedom. Evidence from various studies asking children to name their preferred parent or best friend has been

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used to support these trends. Such methodology has been criticized as too direct, yielding only socially approved results.

Theoretically, these phenomena have been explanied by psychoanalysis in terms of cathection of the libido, and by learning theorists in terms of secondary drives built upon physiological appetites and extended by a process of conditioning to many persons in the environment. By modification of this latter viewpoint, changes in pattern of the child's affective attachments to others are represented as a complex process, in which the child's "role" as perceived by himself and by others modifies with his increasing maturity. Consequently his attachments to others reflect this changing "role." Data accumulated by a sentence completion test given to some 3000 children from the third grade through high school[2] yield some interesting observations on this general picture of social development.

PROCEDURE

From a series of 32 sentences first developed by Wilson (9), some 10 sentences were selected by an empirical procedure for inclusion in a battery of instruments designed to assess general adjustment (2). These sentences were "scored" by the simple expedient of evaluating the completions in terms of the positive, negative, or neutral affect of the response. Using a guide list of typical responses, scorers independently classifying responses attained the agreement expressed by correlation coefficients of +.89 to +.96 in several check samples.

Four sentences evoked attitudes toward parents and toward other children. These sentences were "Most boys _____," "Most girls _____," "My father _____," and "My mother _____."

This method of analysis makes no particular "projective" assumptions about hidden affect in sentence completions. Rather, the manifest affect as conveyed by the vernacular is taken as the basis for inferring "positive," "negative," or "neutral" attitudes. However, the technique is indirect; the sentences do not expressly call for an attitude toward parents or toward peers. These sentences, furthermore, are embedded among other sentences referring to school and to other common childhood experiences.

The items "Most boys _____," and "Most girls _____," can be treated as follows: A child may answer both items positively; an example would be "Most boys are nice," and "Most girls are pretty." He might answer both items negatively, as "Most boys are mean," and "Most girls are dumb." He can answer the items in such a way as to be neutral in both: "Most boys are tall," and "Most girls go to school." A child may answer an item positively for boys, but neutrally for girls, such as "Most boys are nice," and "Most girls are small." For any child there are nine possibilities with respect to completing the two sentences.

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[2] The total school population, public and parochial, in grades 3 through 12 of a county seat town of 8000 in rural Minnesota is included in this analysis. Grade groups ranged in size from 221 in the fourth grade to 123 in the tenth grade and were about evenly divided as to sex. The test was given as one item in a comprehensive program which included 12 instruments.

A child may answer the item referring to parents positively for both, for example: "My mother is the best mother in the world," and "My father is the best father in the world." He may answer them negatively, as "My mother yells at me," "My father is mean." A child may answer both items neutrally, as "My mother is a housewife," "My father is a farmer." He may answer neutrally for his mother but positively for father, "My mother is a teacher," "My father is a wonderful man." His responses may be negative for mother but positive for father, as: "My mother scolds me," and "My father is a nice guy" and so on for the nine various combinations of the three grades of responses to both sentences. It is clear that for a particular child a so-called "neutral" response might have positive or negative affect; we are limiting our interpretation to the usual semantic value of the words used.

RESULTS

By combining percentages of boys and girls in each school grade who give responses of a particular affect classification, it is possible to draw curves expressing certain trends in attitude change. Figure 1 depicts boys' attitudes toward other boys and girls. In this figure are plotted the per-

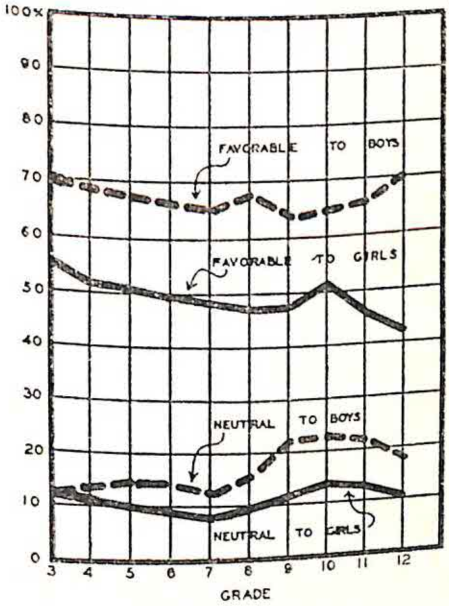

FIGURE 1—Boys' attitudes toward peers

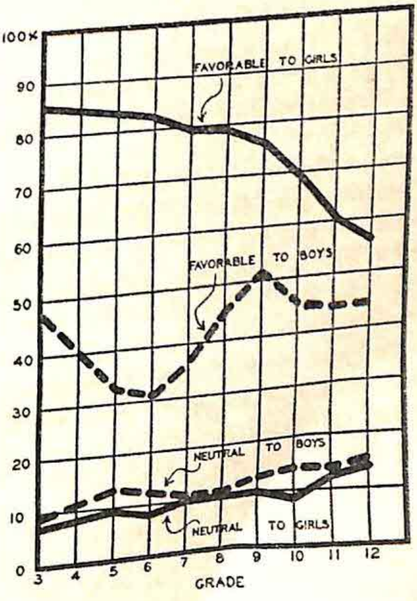

FIGURE 2—Girls' attitudes toward peers

centage of responses positive or "favorable" to other boys and to girls,[3] smoothed by the three-point moving average method. Similar data are plotted for neutral attitudes. Curves showing negative or "unfavorable" responses are omitted because their plots complicate the graph visually, and their character is fully determined by the data shown in the favorable and neutral curves. Figure 2 shows girls' attitudes toward other girls and boys.

Figure 3 reports curves redrawn from Figures 1 and 2 to compare like-sex attitudes. Boys' positive responses toward boys are compared with girls' positive responses toward girls. On this chart negative responses are also plotted, neutral responses being omitted for sake of simplicity. Similarly, Figure 4 depicts cross-sex attitudes by plotting boys' *positive* responses toward girls and girls' *positive* responses toward boys. Negative responses are not plotted because the points would fall close to the percentage points for favorable categories and would complicate the diagram.

The figures speak for themselves but a few comments may be in order. Approximately 65 to 70 per cent of the boys give positive responses to other boys at all grade levels. Boys are more positive to boys than to girls in all grades. In general, taking into account the proportion of neutral attitudes, boys in the intermediate grades are more favorably than unfavorably disposed to girls, judged by the affect tone of their sentence completions. By grade 8, about the same proportion of boys give favorable as give unfavorable responses to girls. Indeed, this general decline in favorable or positive attitude toward girls is counteracted only slightly in the tenth grade, and continues noticeably thereafter. This finding does not bear out the general expectation of boys' heterosexual attitudes in adolescence. It may be that, for older adolescent boys, a positive attitude toward girls is limited to *particular* girls. At any rate, there appears to be a fair proportion of boys throughout adolescence who give a negative completion to the general stimulus "Most girls ____."

A noteworthy trend in girls' attitudes is the noticeable increase in negative responses to other girls following the ninth grade. Perhaps this change expresses an increased competitiveness among females in the adolescent years! Paralleling this trend is the slight but noticeable increase in number of boys showing neutral attitudes toward other boys in the high school years. Perhaps girls personalize their feelings more toward their own sex in adolescence, while boys shift more toward neutrality, and do not move into negative feelings.

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[3] To the percentage of boys giving favorable responses to both boys and girls are added the percentage of boys giving favorable responses to boys but neutral responses to girls, plus the percentage giving favorable responses to boys but unfavorable to girls. Data for the curve, "Neutral responses to boys" were obtained by combining the percentage of boys giving a neutral response to both boys and girls with the percentage giving a neutral response to boys but unfavorable to girls, and the percentage giving a neutral response to boys but favorable to girls. Similar combinations of percentages were made for Figures 2, 3, and 4.

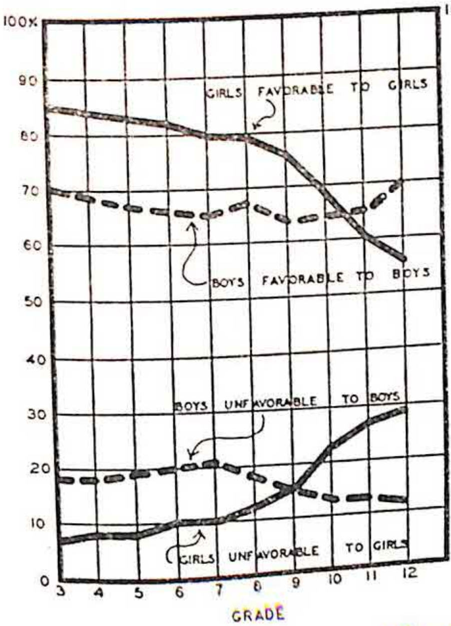

Figure 3—Attitudes toward peers of like sex

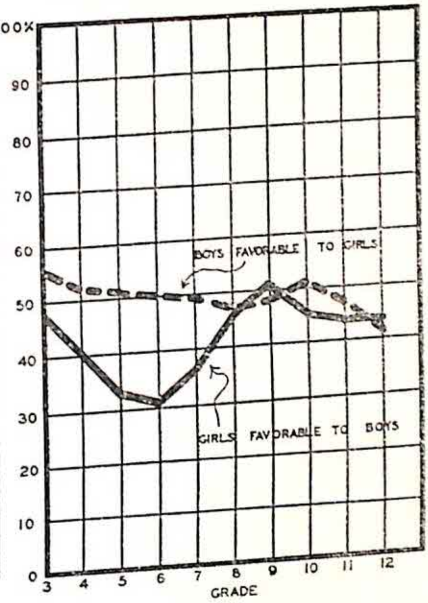

Figure 4a—Attitudes toward opposite sex

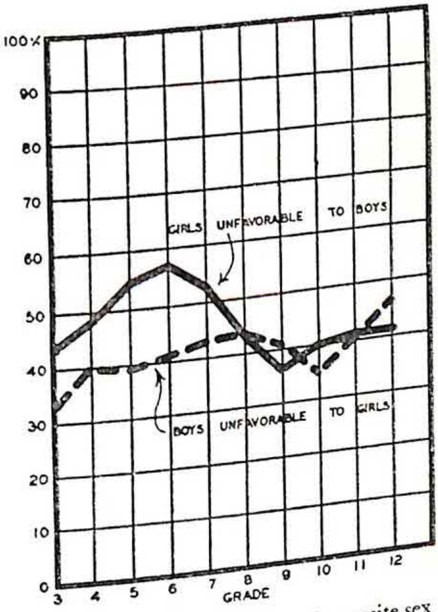

Figure 4b—Attitudes toward opposite sex

In general, there is a falling off in favorable responses extended peers as children grow older; this trend is partly accounted for by an increase in neutral responses. Only in girls is there evidence for an increase of negative response, and these are directed toward their own sex.

Both boys and girls give a large number of favorable responses to their own sex, with girls being more favorable to girls in general than boys are to boys, except in the late high school years. In general, both unfavorable and neutral responses given to the same sex are small, never exceeding 30 per cent, and involving usually between 10 and 20 per cent of children in all grade groups. Below grade 9 boys give noticeably more negative responses to other boys than girls give negative responses to other girls. Possibly the rough and tumble to which boys of this age are prone is not enjoyed by a fair portion of the group. Or possibly a percentage have "interiorized" the social disapproval often visited on the social behavior of boys in this age group.

When cross-sex attitudes are compared, it is interesting to note that more boys are favorable to girls in the intermediate grades than the proportion of girls which express themselves as favorable to boys. This difference increases through the intermediate grades, reaching a maximum around grade 6; then the curves tend to come back together. The suggestion is that the boy-girl antipathy in the intermediate grades is more a product of girls changing their attitudes toward boys than it is of boys changing their attitudes toward girls. The impatience of girls aged 10 to 12 with the boisterous conduct of boys is a familiar phenomenon in any family or school room.

These data strongly suggest that girls, in general, are more "emotional" in their attiudes toward peers than are boys. Despite their changing attitudes, girls generally give more positive responses than boys. Generally speaking, boys extend more neutral attitudes than girls. Both sexes give more negative responses to opposite sex than to own sex, and the difference is particularly noticeable in girls. The proportions of negative responses given by either sex to other children (boys and girls combined) are approximately the same. These percentages tend to be under 10 or 15 per cent.

There are not many other studies of peer attitudes which are comparable. Studies of friendships cast little light on children's favorableness or unfavorableness toward other children in general. Koch's study (4), which obtained preference choices by the paired-comparison method from each child in a number of grades, comes closest to giving comparable material. By limiting her analyses to frequency of preference choice in opposite sex pairs of names which did not include the judge but compared all other children in his room, Koch found that the members of each sex in all grades and usually even at the high school level were inclined to show a preference for their own sex. This "distance between the sexes" tended to increase with grade or age and then to decrease, the trend being conspicuous in high school. Her data also suggest that girls' preference for girls in the lower grades exceeds boys' preference for boys, but that this relative position is decreased and even reversed in the tenth and twelfth grades where boys are more likely to prefer boys than girls are to prefer girls.

All these findings are substantially in agreement with our own evidence, obtained by a very different method. In commenting on the decline in girls' preference for girls in bi-sex pairs of names in high school, Koch wonders whether older boys and men ultimately reduce their bias in favor of their own sex, as women do. The data of this study, using a quite different method, suggest that this "reduction of bias toward own sex" actually may be characterized in girls as an increase in negative attitude rather than as an increase in neutral attitude. This study, of course, sheds no light on Koch's speculation concerning men. Koch also suggests from indirect evidence in her data that there may be "more hostility to boys in the sex bias of girls than loyalty to girls." Our method, which evaluates the elicited affect toward the other sex in general, supports this conjecture, insofar as attitudes toward boys are concerned. Although Koch believes "girls reject boys more than girls prefer girls," our data do not show that the percentage of girls showing unfavorable affect toward boys ever approximates the proportion expressing favorable attitudes to other girls.

Campbell's study of social-sex attitudes (3) in children was based on observations of same-sex and cross-sex contact in a coeducational club program. Actual contacts were not counted; rather, the character and quality of contacts were described in a systematic, but general manner for each child participating. Her descriptions of typical patterns of behavior support the general finding of like-sex preference in the grades, with girls showing a shift toward greater interest in boys by mid-teens, somewhat sooner than a comparable shift occurs in boys. She notes no behavior which would reflect the sharp increase we found in girls' unfavorable attitudes toward boys in the fifth, sixth, and seventh grades, nor the decline in favorable attitudes toward other girls in the high school years. Campbell records no behavior in boys which is inconsistent with the data of this study. Of the 14- to 17-year-old boy, she states that he "shys away from girls in a group but may be less shy when only one girl is to be considered." This observation is perhaps not incompatible with the data in Figure 1.

The data of our study are congruent with other findings, though not perhaps with the impression that boys go through an anti-girl phase in the elementary grades, followed by an increasing interest in girls in general in high school. This cycle of events does appear to characterize girls. Boys change their affect less as they grow older and incline more than girls to neutral attitudes in peer relationships. In general, children are cordial rather than antipathetic or neutral in their attitudes toward peers.

Figure 5 depicts boys' positively toned responses toward mother and father. Negatively toned responses are also plotted, but not "neutral" responses, which constitute a generous proportion. Figure 6 gives similar data for girls' attitudes toward mothers and fathers. Figure 7 shows the percentage of children expressing preference for mother, or liking parents equally well.[4]

Young boys are more favorable to their mothers than to their fathers, and the sharp drop in favorableness to both parents between grades 3 and 5 is noteworthy. Neutral attitudes toward both father and mother rise sharply from grades 3 to 4 and remain largely unchanged until late high school years, when there is some shift back toward positive attitudes. Unfavorable attitudes toward parents remain close to 5 per cent in all samples. Young girls also show a sharp drop in favorable responses toward both parents between grades 3 and 5, with a corresponding rise in neutral attitudes. In both boys and girls there appears to be a shift away from the young child's uncritical fondness for parents to a more objective judgment which expresses itself in the greater proportion of neutrally toned, matter-of-fact completions. Unfavorable responses for girls, as for boys, constitute about 5 per cent or less for both father and mother, but girls' unfavorable responses, unlike boys', tend to rise slightly after about grade eight.

When we infer attitudes from sentence completions, we find no evidence for hostility to parents in early or mid-adolescence. Such feeling, if it occurs in many young people, either does not find expression in sentence completions or is so variously placed in the teen years and of such short duration that it cannot appear in cross-sectional data. The percentages of boys and girls giving negative responses to either parent are very similar and uniformly small. In these, as in the previous figures, the greater "neutrality" of the male appears.

Figure 7 shows that, in general, boys and girls in about the same proportion prefer the mother, between 20 and 30 per cent of preference choices being given to her. There is, perhaps, a slight increase in girls' preference for mother from grades 3 to 7, but no particular change in boys' preference for her. About the same proportions of boys and of girls prefer the father, the values tending to remain under 10 per cent at all grade levels. There is a very slight trend for more girls in the adolescent years to express a preference for fathers.

More girls than boys report equally favorable attitudes toward both parents at all ages except the twelfth grade, but the differences are cer-

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[4] The percentage of children preferring the father was obtained in each grade group by combining the percentage giving a neutral response to mother but a favorable response to father with the percentage giving an unfavorable response to mother, but a neutral response to father, and with the percentage giving an unfavorable response to mother, but a favorable response to father. In every case the affect tone of the completion to the stimulus "My father——" was relatively more favorable than the affect tone given by the completion of the stimulus "My mother ——." The percentage "Like equally well" is found in Figure 7 by plotting only those giving a *favorable response to both*. The small percentage of children giving an unfavorable response to both parents (never over 4 per cent in any grade group) is omitted, as well as the fairly high percentage of responses which are neutral to both parents (this runs roughly between 25 and 35 per cent for most grade groups), even though both of these groups in a sense may be said to like their parents "equally well."

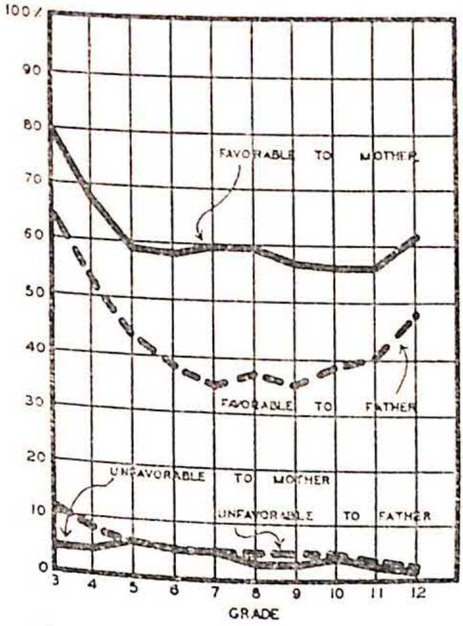

FIGURE 5—Boys' attitudes toward parents

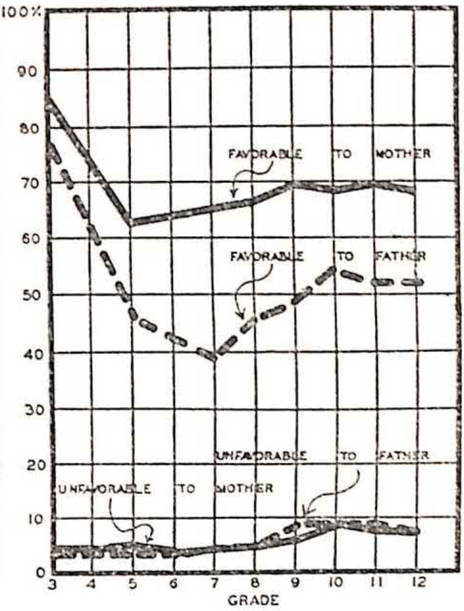

FIGURE 6—Girls' attitudes toward parents

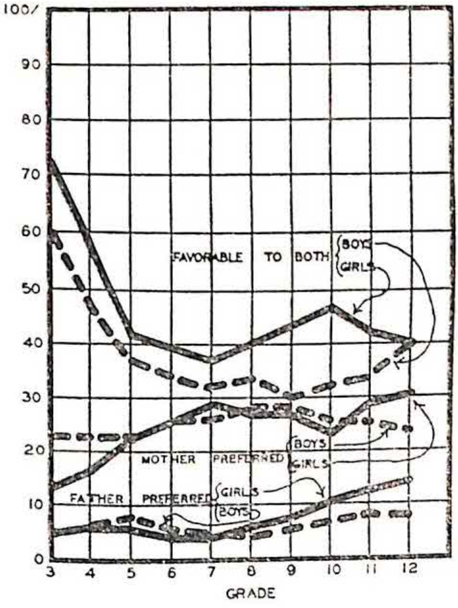

FIGURE 7—Children's parent preferences

tainly not striking. The sharp decline from the third to the fifth grade is of some interest. This study begins at the third grade, apparently toward the end of a period in which children give equally to both parents general, undiscriminating and positive attitudes. This trend coincides with and expresses the movement toward a greater proportion of neutrally toned responses noted in Figures 5 and 6.

These findings agree in general with results of other studies. Using a combination of the picture-story method, questions about preferential treatment at home, and a direct question about whom the child liked best at home, Simpson (7) concluded that between ages five and nine, boys and girls alike show a decreasing preference for their fathers, with a very slight increase in the percentage favoring mothers. There was a pronounced increase up to age nine in the proportion of children stating that they "prefer both," which may be compared with the decreasing proportion reporting positive attitudes to both parents in the present study. Anderson (1) in the White House Conference report of 1936 showed that by the mothers' report a majority of children expressed no preference between their parents, and that of those who did, the larger group favored the mother. The percentages for these attitudes changed very little with age. Likewise, Meltzer (5), Stogdill (8), and Mott (6) found mothers more likely than fathers to be designated the favorite parent at all ages. None of these studies showed any trend comparable to the upswing in positive attitude toward parents during mid-adolescence which appears, particularly for boys, in the present study. These data offer a picture of increasing objectivity in later childhood, in part expressed by the increased proportion of children (particularly of boys) who use neutral expressions in their sentence completions, both towards peers and parents.

SUMMARY

A sentence completion technique, used to infer attitudes toward peers and parents, leads to the following conclusions:

1. Boys and girls are predominantly favorable to their peers, and at every age positive attitudes to own sex peers exceed those to opposite sex peers.

2. Boys somewhat more than girls express neutral attitudes. Girls clearly express more negative attitudes to their own sex as they grow older.

3. The so-called boy-girl antipathy of the intermediate grades is more a product of girls changing their attitudes toward boys than vice-versa. Boys show a slight over-all decrease in favorable attitudes toward girls, even in the later high school years.

4. Toward both mother and father, boys and girls extend more favorable than unfavorable attitudes, though there is a noticeable increase in neutral affect in the intermediate grades. Both sexes extend positive attitudes more frequently to mother than to father.

5. Boys in high school years show a slight rise in positive attitudes toward each parent; girls show a more pronounced increase in positive attitude toward father than toward mother in these same years.

6. The small proportions of boys showing negative attitudes toward mother and/or father decrease steadily through childhood and adolescence. The correspondingly small proportions of girls showing negative attitudes increase steadily through childhood and adolescence.

7. When a difference exists in the attitudes a boy or girl extends to his parents, he or she more often prefers the mother than the father. A larger group, however, extends similar (and positive) attitudes to both parents. There is a slight rise in girls' preference for father during the high school years.

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RELATIONSHIPS BETWEEN DEPENDENCE ON ADULTS AND SOCIAL ACCEPTANCE BY PEERS

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The belief is widely held by those responsible for guidance of children that extreme dependence upon adults in a nursery school situation indicates that the child has not had his needs met for satisfaction in contacts with adults, particularly his parents. It is also commonly assumed that a warm and satisfactorily dependent relationship with adults (particularly parents) must exist before a child can be secure enough to gain emotional satisfaction from social competence with and acceptance by peers. Sears' (7) position provides some support for these points of view. He has thought of extreme preschool-aged dependency as being possibly due to weaning and feeding frustration in infancy, these having aroused anxiety associated with adults so that adult controlling and manipulating behavior is essential to the child's emotional economy. Dependency is the expression of this controlling behavior.

The opinion is seldom advanced that adult dependency in preschool situations may be due to lack of techniques for relating with peers, without other dynamic determinants. Rarely expressed also is the opinion that exteremely gratifying parents may develop habits of dependency in their children (probably reinforced by the same kind of teachers), thus perhaps reducing or precluding the possibility that the children can find equivalent satisfaction with their peers.

To the authors' knowledge, it has not been established empirically that any relationship, positive or negative, exists between dependence on adults and competence with peers, including acceptance by them. While Heathers (1) has studied relations between preschool children's dependence on teachers and their types of play with peers, he has not dealt with social acceptance as such, and its relationship with dependency. One investigation deals with this subject indirectly: McCollum (4) reported that a teacher's rating

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of "mature dependency" and sociometric status were related positively to a test of creativity for four- and five-year-old children.

The authors have reported a technique for eliciting sociometric choices from preschool aged children, using pictures (3), that is both reliable and useful. They have also revised the Hyde and York (2) "moving sociometric techinque" of observation so as to be able relatively quickly to gain reliable quantitative data on adult-child and peer social interactions in a nursery school free play situation (5).

Using the observed number of adult-child interactions as the measure of dependency, this paper asks two questions: (1) Is the degree of preschool children's dependency on adults in free play situations related to their participation with and acceptance by peers? (2) If such a relationship is found, is it affected by the progress of acquaintance in a preschool group from its inception through time?

SUBJECTS AND PROCEDURES

Ss constituted two groups in the Laboratory Preschools of the University of Iowa's Child Welfare Research Station. Children were selected for these groups and teachers assigned by regular Station procedures, independently of the present authors. Fathers of all children were engaged in professional or business-managerial occupations. It was the first Station preschool experience for the majority of the children in each group, although three children were members of both groups. One boy of these three was absent from school too often in Group I to be used as an *S*, leaving 10 girls and nine boys in Group I (I). School absence also eliminated a girl in Group II (II), leaving as *Ss* nine girls and 10 boys. Mean CA at the time of beginning observations for I was 4-4 years; II averaged 4-11 years at the beginning of the first of two play observation series (IIA). The two groups were combined into a single sample of 36 *Ss* for the correlations listed in Table 1 of this paper, and for these, Group II records and tests were used for the three children belonging to both groups. There was no teacher overlap between groups, and each group was staffed with an experienced head teacher and two graduate teaching assistants. Interactions with other adults (e.g., the present investigators, student observers, graduate assistants, parents) are included in the dependency measures.

Peers and child-adult interactions were recorded in similar fashion by a modification of the Hyde-York (2) observation technique, as described more fully in another paper (1). The interactions were recorded for two-minute periods in the following categories for both peer and child-adult interactions: (a) Association: apparent mutual awareness of a common activity or interest, and as further defined by Parten (6). (b) Friendly approach or response that is neutral, pleasant, friendly, or helpful. It may be limited to one word or include many words. (c) Conversation: *Ss* converse in a friendly fashion for one-half minute or more of the two-minute observation time (used for II only). (d) Hostile: verbal or physical approach or response that interferes with the on-going activity of the *S*, is a direct attack, or is judged deliberate "snubbing" withdrawal from some approach of the child or adult.

An adult dependency score was obtained for each child by adding the observed incidence of adult-child interactions, by category or combinations of categories (as indicated in Tables 1 and 2), and dividing this sum by the total number of minutes of observation for the child.

For *S*s in I, a minimum of 100 minutes of observation per child was obtained over one calendar month. At least 200 minutes of observation—two 100-minute series designated as IIA (earlier) and IIB (later)—were recorded for each *S* of II over six calendar weeks. In all observations, *S*s were in indoor and outdoor free play situations offering a wide variety of companions and activities. All preschool hours and activities were included in the observations except situations where spontaneous social interactions between children were not encouraged or could not develop, such as listening to stories, resting, juice service or dressing.

Odd-even sampling reliability of dependency scores was computed only for the friendly approach category and its combinations, since zero scores were obtained in the split halves of other categories for many *S*s. Odd-even split-half dependency scores for this category and its combinations in IIA had Guttman coefficients of .69 to .72. Sampling reliability over time was computed for two different split-halves. The two 100-minute series of II had the following Guttman coefficients for dependency scores: friendly approach, .65; conversation (for the 14 *S*s with scores), .84; association plus friendly approach, .74; association plus friendly approach plus conversation, .77. However, in the split of the first and second 50-minute scores of IIA, friendly approach dependency scores had a Guttman coefficient of only .16. Sampling reliability of dependency scores, then, is low to moderate, where high sampling reliability was obtained for peer interaction scores. These latter ranged from .80 to .95 in all splits of observation records (5).

Four measures of peer social acceptance and participation were used in this investigation: (a) Sociometric score, obtained from verbal choices of *S*s (3). The scores in Table 1 were obtained from choices during the fourth of a series of four test periods for I and the third of three for II. (b) Teacher judgment (of social status) score (3). The score used in Table 1 was obtained from judgments of teachers made at the same time that the sociometric choices were obtained. (c) Observed social acceptance score (5), or, roughly, the sum of the number of children for whom the *S* was observed to be one of the three peers played with most frequently in I and IIB records. (d) Peer interaction score for single and combined categories of observed interaction. Limited to social interactions with other children, this score was obtained in the same way (5) as the dependency score and is a measure of degree and kind of social participation with peers. For Table 1 analyses, scores from observation records of I and IIB were used.

RESULTS

1. Is the degree of preschool children's dependency on adults in free play situations related to measures of social acceptance by and interaction with peers?

Table 1 gives product-moment and biserial correlation coefficients obtained between dependency scores and measures of social acceptance and participation for the sample of 36 *Ss*. All but two of the 35 coefficients are negative, 15 of them being significant at the $p = .05$ or less level. When the same correlations were computed for each group separately, a similar consistency in negative direction and size of coefficients was obtained for both I and IIB. The consistency of direction and frequency of significance of these relationships indicates that dependence on adults in the preschool situation accompanies relatively low social status and group participation.

TABLE 1

CORRELATION COEFFICIENTS FOR ADULT DEPENDENCY SCORES AND PEER ACCEPTANCE OR PARTICIPATION SCORES FOR SAMPLE OF 36 *SS*

	ADULT DEPENDENCY SCORES‡				
	A		FA	A+FA	H
Peer Acceptance or Participation Scores	r_{bis}	r†	r	r	r_{bis}§
Sociometric Scores	—.59*	—.27	—.26	—.32	—.51*
Teacher Judgment Scores	—.50*	—.21	—.39*	—.40*	—.23
Observed Social Acceptance Scores	—.13	—.25	—.49**	—.45**	—.09
Peer Interaction Scores: ‡					
A	—.40	—.23	—.42*	—.45**	—.15
FA	—.54*	—.37	—.64**	—.67**	—.24
H	—.09	.16	—.11	—.07	.19
A + FA	—.50*	—.32	—.56**	—.59**	—.21

* r or r_{bis} is significant at $< .05$ level.

** r is significant at $< .01$ level.

† $N = 30$.

‡ Observation category letters are abbreviations for names of the categories, as follows: A = Association; FA = Friendly Approach; H = Hostile.

§ 11 *Ss* had zero scores in the hostile "dependency" category.

The practical importance of the significant negative correlations between dependency and the categories of association (A) and friendly approach (FA) is pointed up when it is noted that A + FA make up 86 per cent of all the observed peer social interactions of these children, A composing 36 per cent, FA 50 per cent.

The negative relation between children's sociometric scores and dependency scores differed significantly from zero for the biserial coefficients of association and hostile dependency scores, as shown in Table 1. All dependency scores except those for the hostile category correlated negatively and significantly with teacher judgments of social status. Observed social acceptance scores correlated significantly with dependency scores in the friendly approach category and the additive combination of categories. In general, then, negative relations were found to exist between dependency scores and each of these three measures of social acceptance obtained after several weeks of acquaintance.

The negative relationship between dependency scores and degree of social participation with peers was most marked for the correlations of the friendly approach category peer interaction scores. This category of peer interaction scores was related negatively and significantly to all dependency scores except those of the hostile category. The product-moment *r*'s were the largest in size of any obtained for the total sample. For the friendly approach dependency scores, the *r* obtained with the same category of peer interaction scores differed significantly from the *r*'s obtained with association (.02 level) and hostile (.01 level) peer interaction scores. Hostile peer interaction scores appear to be unrelated to either friendly or hostile dependence on adults.

The conversation category of interactions with adults was recorded only in observations for II. In IIB, conversation dependency scores correlated negatively and significantly with friendly approach ($r = -.50$) and A + FA ($r = -.49$) peer interaction scores. However, the correlations with the three measures of social acceptance were not significant (r's $= -.39$ to $-.45$). Conversation peer interaction scores correlated significantly with association dependency scores ($r_{bis} = -.52$) and with the combination dependency scores ($r = -.52$).

2. Is there any indication that the degree of a child's dependence on adults and its relation to other scores change as acquaintance progresses in a newly formed preschool group?

The 100 minutes of observation records of series IIA were collected for the 19 *S*s in the initial three to four weeks of the group's existence. The product-moment correlation coefficients between friendly dependency scores and other measures taken during this series, presented in Table 2, are neither significant nor consistent in direction. The only correlations approaching significance are positive relations between dependency scores and hostile peer interaction scores; these correlations hovered around zero in observation series IIB. These data, considered in conjunction with the data presented in the previous section, suggest that negative relations between dependence on adults and measures of social status and participation with children may come to exist only after a period of several weeks' acquaintance in a preschool group.

Additional evidence of a change in dependence on adults is furnished by tests of differences in dependency scores obtained in the IIA and IIB observation series. The mean differences in scores were significant beyond the .001 level by two-tailed *t* tests for all categories, although the direction

TABLE 2

CORRELATION COEFFICIENTS OF DEPENDENCY SCORES WITH OTHER MEASURES OBTAINED DURING OBSERVATION SERIES IIA, $N = 19$

Peer Acceptance or Participation Scores	ADULT DEPENDENCY SCORES*			
	FA	C†	A+FA	A+FA+C
Sociometric Scores:				
First Sociometric	—.02	.11	—.03	—.02
Second Sociometric	—.03	—.04	—.09	—.10
Teacher Judgment Scores:				
First Judgment	.32	—.15	.22	.15
Second Judgment	.08	.01	.04	.01
Observed Social Acceptance Scores	.01	.16	.01	.02
Peer Interaction Scores: *				
A	—.07	.16	—.10	—.08
FA	.15	.10	.08	.08
C	.00	.24	—.01	.02
H	.33	.31	.35	.39
A+FA	.07	.13	.01	.01
A+FA+C	—.07	.10	—.11	—.10

* Observation category letters are abbreviations for names of the categories, as follows: A = Association; FA = Friendly Approach; H = Hostile.

† There were two zero conversation dependency categories, hence $N = 17$.

of the difference was not the same for all categories. Friendly approach and the additive combination dependency scores were larger in IIA than in IIB, while conversation dependency scores were higher in IIB.

Zero scores in the dependency categories of association and hostile prohibited treatment as continuous variables. Twelve *Ss* had no association interaction with adults in IIA, but only four *Ss* had zero association dependency scores in IIB. Hostile "dependency" interactions were recorded for seven children in IIA and for 11 children in IIB.

SUMMARY AND CONCLUSIONS

Relations between dependence on adults and social acceptance by peers were studied, using as *Ss* 38 children attending two newly formed preschool groups. Dependency was measured as the observed number of social interactions with adults in nursery school free play situations.

A negative relation was obtained consistently between dependency scores and measures of peer social acceptance obtained after several weeks of acquaintance. Significance of *r*'s varied for categories of dependency scores but, in general, significant negative relations were found to exist between dependency and sociometric scores, teacher judgments of popularity, observed social acceptance in play, and number of observed friendly interactions with playmates (but not with hostile interactions). These data indicate that dependence on adults in the preschool situation accompanies relatively low social status and participation.

One of the groups of 19 *S*s was observed and tested at the beginning of acquaintance. The relations between dependency scores and peer social acceptance measures were neither significant nor consistent in direction. Changes in dependence on adults as acquaintance progressed suggest that further investigations of social interactions of both adults and children in newly formed preschool groups may contribute knowledge of how dependence on adults waxes and wanes in children as they function in groups.

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SEX DIFFERENCES IN SOCIAL ACCEPTANCE AND PARTICIPATION OF PRESCHOOL CHILDREN

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The opinion is often expressed by both casual and experienced observers of nursery school free play that girls seem to engage in more social interaction of a friendly nature than do boys. However, research on sex differences in social participation of preschool children has been limited to specific traits or actions, such as aggression, hostility, sympathy, etc. Studies of social acceptance in the preschool years also have given but little attention to sex differences. Sociometric studies of these ages (1, 2, 4) report that choices on sociometric tests tend to be for the same sex as the subject, but do not report on sex differences in sociometric scores.

The authors have reported elsewhere investigation of relationships between four measures of peer social acceptance and participation (5, 7) and a measure of dependence on adults (6) for 48 children attending three newly formed preschool groups. This report describes the additional analyses of these data needed to provide empirical answers to three questions: (a) Do preschool boys and girls differ in scores obtained on measures of social acceptance and participation? (b) Are there sex differences in the relationships existing between concurrent measures of social acceptance and participation? (c) If they occur, are sex differences in social acceptance by peers affected by the progress of acquaintance in newly formed preschool groups?

SUBJECTS AND PROCEDURES

Both the subjects (*S*s) and procedures have been described in detail in preceding reports (5, 6, 7). All *S*s attended newly formed groups in the Laboratory Preschools of the University of Iowa's Child Welfare Research Station. Data reported in Tables 1 and 2 were collected concurrently and are those of the final test periods for two preschool groups. Data reported in Table 3 include another preschool group in addition to these two. Test periods for all three groups began within the first month of acquaintance and were spaced at 10 calendar day intervals.

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The five measures of social acceptance and participation were as follows: (a) sociometric score, obtained from verbal choices of *Ss* (5); (b) teacher judgment score, obtained from teachers' listing of best friends (5); (c) observed social acceptance score, or, roughly, the sum of the number of children for whom the *S* was observed to be one of the three peers played with most frequently (7); (d) peer interaction score, or, the average incidence during two minutes of nursery school free play of social interactions with other children categorized as association, friendly approach, and hostile interaction (7); peer interaction scores were obtained for these categories both singly and in combinations; (e) adult dependency score, or, the average incidence of social interactions with adults categorized in the same way as peer interaction scores (6). The standard observation unit to which this average refers is two minutes.

TABLE 1

DIFFERENCES IN MEAN SCORES OF 18 GIRLS AND 18 BOYS FOR MEASURES OF SOCIAL ACCEPTANCE AND PARTICIPATION

Measure of Social Acceptance or Participation	Girls *Mean*	Boys *Mean*	D_M
Sociometric Score	39.83	29.72	10.11*
Teacher Judgment Score	10.41	9.68	.73
Observed Social Acceptance Score	12.67	11.08	1.59
Peer Interaction Scores:			
Association	.96	.74	.22
Friendly Approach	1.28	1.10	.18
Hostile	.32	.38	.06
Association + Friendly Approach	2.24	1.84	.40
Adult Dependency Scores:			
Association (12 girls, 17 boys) †	.04	.05	.02
Friendly Approach	.44	.50	.06
Hostile (10 girls, 15 boys) †	.04	.06	.02
Association + Friendly Approach	.48	.56	.08

* This difference in means was significant at the .05 level. No other differences in means were significant by either *t* or *F* tests.

† The *Ss* subtracted for these means were those having zero adult dependency scores in these categories.

RESULTS

1. Do preschool boys and girls differ in scores obtained on measures of social acceptance and participation?

The only measure of social acceptance or participation with a significant difference in mean scores for the two sexes was the sociometric test, as shown in Table 1. Sociometric scores of girls averaged one-third higher than scores of boys. Sex differences could not be demonstrated for any other measure, although girls had slightly higher scores than boys on all measures of peer acceptance and participation, excepting hostile interaction, and boys had slightly higher adult dependency scores than girls.

2. Are there sex differences in the relationships existing between concurrent measures of social acceptance and participation?

Correlations between measures of peer social acceptance and participation were not affected by sex differences, as shown in Table 2. Only one of 12 possible differences in correlations was significantly different from zero. Despite the higher mean sociometric scores for girls, there were no significant sex differences in correlations of sociometric scores with other peer social behavior measures.

TABLE 2

DIFFERENCES IN CORRELATIONS OF 18 GIRLS AND 18 BOYS BETWEEN MEASURES OF SOCIAL ACCEPTANCE AND PARTICIPATION

Measure of Social Acceptance or Participation	Sociometric Score			Teacher Judgment Score			Adult Dependency Score†		
	Girls	*Boys*	*p**	*Girls*	*Boys*	*p**	*Girls*	*Boys*	*p**
Sociometric Score				.58	.42	..	—.42	—.10	(.06)
Teacher Judgment Score	.58	.42	..				—.38	—.35	..
Peer Interaction Scores:									
Association	.49	.55	..	.71	.67	..	—.54	—.19	.02
Friendly Approach	.56	.44	..	.48	.85	.02	—.75	—.51	.02
Hostile	—.09	.36	..	.19	.39	..	—.12	.09	..
Association + Friendly Approach	.56	.54	..	.75	.82	..	—.68	—.38	.02

* *p* entries are those of differences significant beyond the .05 level in these product-moment correlations.

† The Association + Friendly Approach Dependency Score was used for these correlations. Friendly Approach Dependency Score correlations were similar to these, except that the correlations with sociometric scores differed significantly (.02 level): —.39 (girls) and .01 (boys).

Sex differences did occur for some of the negative relations existing between measures of peer social behavior and adult dependency scores. The negative correlations between peer interaction and adult dependency scores were significantly larger for girls than for boys in all except the hostile category scores. The negative relation between sociometric scores and adult dependency scores (see footnote †, Table 2) may also be described as significantly larger for girls than for boys.

It is interesting to speculate about sex differences in this area. It may be in our culture that girls who are less popular feel freer than boys to seek satisfaction from teachers through dependency, whereas boys have already begun to learn that dependency is not "boylike." The not-popular boy may tend more to seek solitary activities or some type of behavior other than dependency to compensate for his lack of popularity. It could also be that adult dependency is more satisfying to girls than it is to boys and that those girls who seek it have fewer social needs remaining to be satisfied by the peer group, hence, are less well accepted. The picture might change with the sex of the adult, as well, with girls in the preschools being relatively more completely satisfied by the predominantly female teachers, whereas, with a group of male teachers dependency behavior might interfere with boys' popularity. However, the head teacher was male in one of the two groups reported in Tables 1 and 2. His group did not differ in measures of dependence on adults from the group with all female teachers. Adult dependence may also be due simply to lack of techniques for relating with peers (6).

3. Are sex differences in social acceptance by peers affected by the progress of acquaintance in newly formed preschool groups?

Inspection of Table 3 suggests that sex differences changed in three consecutive test periods for sociometric and teacher judgment scores, but did not change in the same direction for the two measures. By *t* tests, the mean sociometric scores of girls did not differ from scores of boys in the first test period, but did thereafter, while, for teacher judgment scores, only the final test period difference lacked significance. However, the *F* for the test of sex differences obtained by a Lindquist Type I analysis of variance (3) was significant at the .05 level for sociometric scores in these periods but was not significant for the corresponding teacher judgment scores. In neither analysis were the *F*'s significant for test period or for the interaction between sex and test period. Hence, it could not be demonstrated for these data that either the sex difference in sociometric scores or the lack

TABLE 3

DIFFERENCES IN MEAN SOCIOMETRIC AND TEACHER JUDGMENT SCORES OF 24 GIRLS AND 24 BOYS IN THREE CONSECUTIVE TESTS

Test Period	Girls *Mean*	Boys *Mean*	D_M	t	p
Sociometric Scores:					
First Period	33.58	29.88	3.70	1.12	NS
Second Period	37.79	29.92	7.87	2.71	.01
Third Period	40.00	28.37	11.63	3.94	.001
Teacher Judgment Scores:					
First Period*	11.37	7.44	3.93	3.12	.01
Second Period*	10.83	8.56	2.27	2.20	.05
Third Period	11.19	10.30	.89	.78	NS

* Teachers judged one child of each sex to have no friends in the first and second test periods.

of a significant sex difference in teacher judgment scores was affected by the progress of acquaintance in newly formed preschool groups.

Intercorrelations between sociometric scores on the first and second test periods were .56 for girls and .76 for boys, and the sex difference in *r*'s was significant at the .03 level. Intercorrelations for the second and third test periods were .80 for girls and .50 for boys. This difference in *r*'s, opposite in direction from that of the first and second test periods, was significant at the .0005 level.

SUMMARY AND CONCLUSIONS

This investigation explored sex differences in five measures of social acceptance and participation obtained for 24 boys and 24 girls attending three newly formed preschool groups. Girls had higher sociometric scores than boys but there were no significant sex differences in teacher judgments of social acceptance, observed social acceptance, degree of social interaction with peers, or degree of dependence on adults. Correlations between measures of peer social acceptance and participation were not affected by sex differences. However, the majority of the negative correlations between the measure of dependence on adults and both sociometric scores and peer interaction scores were significantly larger for girls than for boys. Progress of acquaintance in the nursery school groups did not demonstrably affect the sex difference in sociometric scores.

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PERFORMANCE OF NEAR EASTERN CHILDREN ON THE DRAW-A-MAN TEST[1]

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When Goodenough (2) designed the Draw-a-Man Test for children she believed that she was dealing with a task so universally familiar that her norms might be applicable to all populations. On the basis of data surveyed in a recent review (3) Goodenough unequivocally abandons this position. The present paper reports further data relative to cultural influences based upon 708 Draw-a-Man tests collected in Lebanon and Egypt.

PROCEDURE

All drawings were obtained in accordance with the procedure recommended by Goodenough (2). There were slight local variations in paper size but the smallest used was 7 by 9½ in. and the largest was 9½ by 12½ in. All drawings were obtained in the children's regular classrooms. The teacher was usually present during the testing. The test was administered by the author or by a research assistant one of whom was present at all times to see that proper testing conditions were maintained. In all cases, dates of birth were obtained from school records. The scoring directions for Goodenough's 51 points were carefully followed.

SUBJECTS

The data to be reported here come from four groups described below.

Port Said School. This is a government school in Port Said, Egypt. Local school officials felt that the pupils in this school are representative

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[1] This study was undertaken during 1955-1956 when the writer was a visiting professor at the American University of Beirut, Lebanon. The writer wishes to express his appreciation to the Rockefeller Brothers Fund whose grant to the American University of Beirut made the research possible; to the American University of Beirut for providing facilities; to Mrs. Adele Hamdan Taky Din, Miss Leila Bikamati, Mrs. Yvonne Sayegh, and Mrs. Marie-Therese Broussalian, who served as research assistants; and to the many principals, teachers and pupils for their cooperation. He is also grateful to the staffs of the departments of psychology and education for their valuable counsel and criticism.

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of the total Port Said school population. About 90 per cent of the pupils are Moslem. In Egyptian government schools entrance is at age 6. One room was tested at each grade level from grade 1 through grade 5.

Sidon School. An American school in Sidon, Lebanon, operated by the Presbyterian church. Pupils enter the kindergarten at age 4. While there are some boarding pupils, the majority are day pupils from Sidon. Sidon being chiefly Moslem, the majority of the pupils are from Moslem homes. Testing extended from kindergarten through grade 4.

Armenian Schools. Armenian data were gathered from two schools in Beirut. One, called Armenian A, is a private, tuition-charging school; the other, called Armenian Z, is a free school operated by a philanthropic society in one of the poorest Armenian neighborhoods. Most pupils enter at age 5. All grades from kindergarten through grade five were tested.

University School. An elementary school for Arabic-speaking pupils operated by the American University of Beirut. The enrollment is approximately half-Christian, half-Moslem. Most pupils come from upper middle class homes. It is for boys only. Grades kindergarten through five were tested. Kindergarteners enter at age 5. This school more nearly represents an American curriculum and American methods than does any of the other schools.

TABLE 1

DRAW-A-MAN TEST RESULTS FROM VARIOUS SCHOOLS

	Port Said			Sidon			Arm. A			Arm. Z			Univ.		
Age	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
5 . . .				23	104	17	20	115	22	11	84	11	14	96	16
6 . . .	37	94	12	32	84	13	16	116	21	15	87	13	15	93	13
7 . . .	30	84	14	18	79	10	32	110	21	26	85	17	14	97	18
8 . . .	83	83	16	11	84	9	22	106	24	40	76	13	15	101	16
9 . . .	32	88	13	14	69	7	32	101	23	30	73	11	11	84	16
10 . . .	24	80	10	7	62	11	36	95	18	31	74	15	17	97	17

RESULTS

Table 1 presents for each age level for each group the number of cases, the mean, and the standard deviation. The table begins at age 5 for each group except Port Said, where as indicated earlier, school entrance is at age 6.

Several aspects of Table 1 require attention. First of all, we may note the large differences between the Armenian A and the Armenian Z groups. These two groups probably represent in socioeconomic status and education the "best" and the "poorest" Armenian groups in Beirut. While there is a considerable difference between the means of the two groups at all ages, the two groups are alike in that the trend of IQ's with age is steadily downward. At ages 5 and 6 the midpoint between the means of the two Armenian groups is approximately 100.

The Sidon school and the University school at age 5 each has an average score approximating 100. Port Said, whose first score is available at age 6, at that level has a mean of 94. In other words, these groups start with about the same performance as the American normative group.

The University school maintains this level, but the other two groups just mentioned as well as the Armenian groups drop considerably in Goodenough IQ with increasing age. At age 10 the Egyptian data are very similar to the findings recently reported by Fahmy for another Egyptian sample (1). The Sidon group at age 10 has the exceptionally low mean of 62, but this should not be accepted as representative because it is based on only seven cases. However, at ages 8 and 9 the over-all average of the Sidon sample is less than 80. In the case of the Armenians, the Port Said group and the Sidon group, the difference between the 5- and 6-year-olds and the 10-year-olds is significant at the .001 level of confidence. In brief, two samples from Egypt (Fahmy's and ours) and three samples from Beirut and Sidon in Lebanon indicate that in the Near East children have mean Draw-a-Man quotients approximating 100 at ages 5, a slightly lower mean at age 6, and a mean of about 80 at age 10.

Discussion

These data seem to indicate that there are cultural handicaps to Draw-a-Man performance in the Near East, but that these handicaps affect children most strongly after age 6.

What are the handicaps in experience which create downward trends in Goodenough scores? Any explanation which we offer is obviously a post hoc one. In our opinion, downward trends in scores are related to deficiencies in the child's experience relative to representation of the human figures, as by dolls, masks, wood carvings, sculpture, paintings, and other pictures. In general, the Near Eastern child's visual experience with human representations is limited. In former times, the Islamic world although approving geometric art enforced a taboo against representation of the human figure. At the present time this taboo seems not to exist outside of the Arabian peninsula, but perhaps as a consequence of the former taboo, there is little positive valuation of representative art. Children's books and magazines are few. In schools one seldom sees on the walls the placards and posters resulting from children's projects which are common in American schools.

It will be noted that the students of the University school are the only set of subjects not showing a decline in Goodenough IQ with age. This is the group whose education is most similar to that of Western children.

It also seems certain that the parents of these children have been more affected by Western culture than have the parents of other groups of subjects.

SUMMARY

Draw-a-Man tests given to children between the ages of 5 and 10 years in Lebanon and Egypt indicate that at ages 5 and 6 the mean Goodenough quotient is approximately 100. In most groups the mean quotient decreases with age. A cultural explanation of this decrease is suggested.

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A CROSS-CULTURAL STUDY OF THE REINFORCEMENT OF CHILD BEHAVIOR[1]

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Few psychologists reject the proposition that the rewarding of an act increases the frequency, vigor and promptness with which it will recur. That the strength of a response can be increased by reward has probably been recognized from an early human period. It is likely that parents and other adults—without benefit of Thorndike, Skinner and others—early found that reward was an effective means of social control. It goes almost without saying that they rewarded those acts of which they approved, and hence rewards had the effect of transmitting and inculcating social values.

It follows that if one knew what child behaviors were being rewarded in a society one could formulate hypotheses concerning both the values of the adults and the future behavior of the children. But in a "field situation" it is difficult to know what is being rewarded. The approval of child behavior often occurs in the home, or in some other setting in which it cannot readily be observed. We wish to report some data obtained with a method which we believe will enable a researcher to investigate in nearly any society those reinforcements which probably play a major part in the socialization of the child.

METHOD

The method consists in using the critical incident technique developed by Flanagan and his associates (1). In general, this technique involves asking the subject to describe one or more instances of behavior of a specified kind. In the present connection this means that the subject is asked to describe instances of behavior on his part for which he has been praised.

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[1] The research here reported was done during 1955-1956 while the author was a visiting professor at the American University of Beirut, Lebanon. The writer wishes to express his gratitude to the University for making the study possible, and to the Rockefeller Brothers Fund for a grant to the University which defrayed the costs of the investigation. He wishes also to express his appreciation to those who served as research assistants in the study (Mrs. Adele Hamdan Taky Din, Miss Leila Biksmati, Mrs. Yvonne Sayyegh, and Mrs. Marie Therese Broussalian) and to the principals, teachers and pupils who so generously cooperated.

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The subject is not asked to give generalizations. Instead the investigator derives generalizations from the analysis of many specific incidents.

In the present investigation all data were gathered by means of individual interviews of school children. Specifically, the procedure is as follows: The child is taken from his classroom to the interviewing room by the interviewer. After preliminary remarks to establish rapport the interviewer obtains from the subject his name and his age at his last birthday. He then says: "I am interested in knowing what things boys and girls do that cause people to praise them. Do you remember a time lately when you did something for which someone praised you? Tell me about a particular time when someone praised you."

If the response does not indicate in detail what the child did, or just who was involved or just who gave the praise, appropriate supplementary questions are asked. The interviewer records the responses as nearly verbatim as is possible. In each case, the interview is conducted in the native language of the child. In the present study the answers of children whose primary language was not English were translated by the interviewer and recorded in English.

After the first incident is recorded, the interviewer says, "Now tell me about another time when you were praised." In the study here reported only two responses were requested from each child.

SUBJECTS

All subjects were attending schools in Beirut, Lebanon, and were between 5.0 and 10.99 years of age. The groups were as follows:

Americans. These were pupils at the American Community School in Beirut. In the main they were children of parents employed in Lebanon by American government agencies, by the American University of Beirut, or by American oil companies and other business concerns. By most standards of classification, the majority of the subjects came from middle class well-educated parents. At the time they were tested (March-April, 1956) each child had been in Lebanon a minimum of six months. Many had resided in Lebanon two or more years. Some non-Americans attend this school; their responses were excluded from the results. The pupils of this school constituted the majority of American children of school age residing in Beirut in 1955-1956. There is no assumption that this group is typical of American children in the United States, but it is believed that many American children would give responses similar to those which we obtained. The American subjects totalled 120 children. There was approximately equal representation of the two sexes, and of the various age levels.

Arabs. This group consisted of 240 children chosen so that they could be conveniently subdivided in various ways. The subgroups were boys and girls (120 of each), Moslems and Arab Christians (120 of each), pupils of private schools and pupils of public schools (120 of each) and three age groups, 5- to 6-year-olds, 7- to 8-year-olds and 9- to 10-year-olds (80 of each).

Armenians. Children of this group attended a private Armenian school which is one of the best Armenian schools in Beirut. They belong primarily to the middle class. In most cases, their families emigrated to Lebanon following World War I. In this group there were 60 subjects equally divided as to age and sex.

Jews. These subjects came from a school which is attended by the majority of the children of the Jewish colony in Beirut. All social classes are represented, but it is believed that few parents fall into the unskilled labor classification. The majority of the families of these children have lived in the Near East for several centuries. Arabic is their primary tongue and they were questioned in this language. This group contained 60 subjects approximately equally distributed in regard to age and sex.

Categorization of Incidents

The incidents reported fell into certain categories. These categories, which are listed in Tables 1 and 2, are as follows:

1. *Academic.* This class includes all incidents relating to academic performance, such as being praised for doing lessons, for doing them well, for grades, for improvement, etc. Assisting teacher, however, falls in category 8, and doing unassigned creative or constructive work whether associated with the school or not is placed in category 14.

2-8. *Assistance.* These items are differentiated from each other in terms of the person to whom assistance is given. Sample items are: helped mother wash dishes, ran out and bought groceries for my aunt, etc. Item 6, assisting unfortunates, includes helping a blind man across the street, helping someone who has been injured, giving alms to the poor or to beggars, etc.

9-11. The titles of these categories shown in Table 1 are self-explanatory. "Being quiet" includes refraining from activity as well as refraining from making noise.

12. *Giving or sharing.* This heading indicates voluntarily offering a present to others, giving food, sharing a toy, etc. It does not include alms giving, which is included under item 6.

13. *Creative work.* Under this class is included such items as unassigned art work, making a dress, making a boat or a kite, constructing toys or models, and organizing a group activity.

Categorization of Rewarding Persons

As shown by Table 3, the persons doing the praising were classified according to their relationship to the child. These persons were mother, father, teacher, adult relatives, and other children. Some persons who were reported as praising did not fall into one of these categories; they were omitted from the tabulations. For this reason the percentages in Table 3 do not total 100 per cent.

RESULTS

Table 1 indicates the frequency of each kind of incident in each of the four main groups. Table 2 gives the same information for the various subdivisions of the Arab group. The other groups are not large enough to justify such subdivision. Table 3 compares the groups in regard to the persons who did the praising. Each set of results will be briefly discussed below.

Table 1 demonstrates that the relative frequencies of various kinds of rewarded behavior vary greatly between groups. For example, there is a large difference between the American group and the other groups in regard to the per cent of incidents which involve academic performance (item 1 of Table 1). In the American group praise for academic performance constitutes only 5 per cent of the total. In other groups it makes up from 28 to 41 per cent of the total (p of difference of 5 to 28 per cent $< .001$). This difference may be due to the fact that the American school is a "progressive" one which, between ages 5 and 10, puts very little pressure upon the pupil. By and large, the parents seem to approve of the

TABLE 1

GROUP COMPARISONS OF INCIDENTS REPORTED: PERCENTAGE OF RESPONSES IN EACH CATEGORY

	American	*Arab*	*Armenian*	*Jewish*
1. Academic performance	5%	28%	31%	41%
2. Assist mother	25	26	15	22
3. Assist father	6	2	0	2
4. Assist sibling	9	4	3	5
5. Assist relatives	0	2	3	0
6. Assist unfortunate	0	9	12	3
7. Assist peers	8	0	1	2
8. Assist others	7	5	3	3
9. Being quiet	1	3	5	2
10. Being polite, obedient	5	11	7	7
11. Sports and games	6	2	3	2
12. Giving or sharing	9	2	8	3
13. Creative work	13	2	8	3
14. Miscellaneous	6	5	4	7
Number of children	120	240	60	60
Number of responses	240	440	120	116

permissive atmosphere of the school. In contrast the majority of the Lebanese schools stress academic achievement, even among 5-year-olds, and the parents, too, stress school performance.

While item 1 of Table 2 shows a decline with age in the relative importance of academic achievement among the Lebanese subjects, this is probably due to the fact that other forms of praised behavior, such as assisting others, increase with age. The introduction of new behavior reduces the *proportion* of incidents concerned with praise for academic performance but does not indicate that academic work becomes less important in an absolute sense.

TABLE 2

COMPARISONS OF SUBDIVISIONS WITHIN THE ARAB GROUP: PERCENTAGE OF INCIDENTS IN EACH CATEGORY

	Religion		Sex		School		CA		
	Christ.	*Moslem*	*M*	*F*	*Priv.*	*Gov't*	*5, 6*	*7, 8*	*9, 10*
1. Academic performance	26	30	35	21	29	27	46	21	17
2. Assist mother	26	26	18	33	21	31	19	33	25
3. Assist father	2	2	2	2	0	4	2	1	3
4. Assist sibling	3	5	2	5	6	2	1	4	6
5. Assist relatives	2	2	2	3	1	3	1	3	3
6. Assist unfortunate	8	9	10	8	10	7	1	7	18
7. Assist peers	0	0	0	0	0	0	0	1	0
8. Assist others	7	3	5	5	5	5	2	4	9
9. Being quiet	3	2	1	4	4	2	5	1	3
10. Being polite & obedient	12	9	11	10	9	12	14	12	6
11. Sports & games	1	3	2	1	3	1	1	1	3
12. Giving or sharing	1	2	2	1	2	1	0	3	2
13. Creative work	2	1	2	1	2	1	3	2	0
14. Miscellaneous	7	4	7	5	6	4	6	7	5
Number of children	120	120	120	120	120	120	80	80	80
Number of responses	225	215	215	225	221	219	149	147	146

Among the Lebanese groups, the Jewish group is highest in respect to the emphasis placed upon academic achievement. The p of the Arab-Jewish difference is .01. The Armenian group, which is second, is not significantly different from the Arab group. Table 2 shows that within the Arab group Christians and Moslems do not differ in giving praise for school performance. But boys receive more praise for academic items than do girls.

Attention is next directed to the categories which deal with assisting or helping others (item 2-8). In all groups the child is praised for helping the mother more often than for helping other individuals. It will be noted that the values for assisting father, assisting siblings, assisting peers, and assisting "others" are appreciably greater for the American group than for any other group. Apparently American children are encouraged to enter into cooperative activities rather widely, whereas the Lebanese child's helpfulness centers chiefly upon the mother. An exception to this generalization arises in the case of assisting unfortunates, the majority of whom are street beggars who are blind or crippled or otherwise handicapped. The Near Eastern custom of giving alms to such people is engaged in by children as well as by adults, and children are praised for their almsgiving. This kind of charity seems to be almost absent among the American and among the Jewish children. At any rate, they report no praise for almsgiving.

It will be noted that the American children are seldom praised for being quiet or for being polite and obedient (item 9). The Lebanese parents and the Lebanese teachers, on the other hand, frequently praise the child for sitting still and making no noise. The American-Arab difference in this respect is significant at the 1 per cent level of confidence.

Praise for performance in sports and games (item 11) has three times the frequency among Americans as among the Arab and Jewish groups. The p value of the American-Arab difference is .02.

Giving and sharing (item 12; this item does not include almsgiving) is approximately three times as frequent in the American group as in the Arab and Jewish groups (p of American-Arab difference is .001). Creative work, such as constructing things and initiating projects, is highest among the American children. The American frequency (13 per cent) is 6½ times the Arab frequency (2 per cent) ($p < .001$). The Armenian group is second highest (8 per cent).

Table 3 shows the relative frequency with which children are praised by various persons. The three Near Eastern groups resemble each other in that the major portion of the praise is administered by adults, chiefly by parents and teachers. Near Eastern children appear not to be rewarded by

TABLE 3

PERSONS GIVING PRAISE: PERCENTAGE OF INCIDENTS IN EACH CATEGORY

Persons Praising	*Americans*	*Arabs*	*Armenians*	*Jews*
Mother	37	44	32	34
Father	13	17	7	11
Teacher	5	15	24	28
Adult relatives	0	9	9	8
Children	25	4	12	1
Number of children	120	240	60	60
Number of responses	240	440	120	116

other children, the amounts of praise received from children being only 1, 4, and 12 per cent in the three groups. The difference between the American group and each of the other groups has a p of .001 or less. These facts are in accord with the earlier finding that there is only infrequent reference in these groups to assisting peers. Among the Americans, however, approval by other children makes up 25 per cent of the total. For the Americans, teachers are responsible for only 5 per cent of the praise incidents, whereas for the Jews and the Armenians the corresponding figures are respectively 28 and 24 per cent (p of difference between 5 and 24 per cent $< .001$). The Americans appear to relate much more to their peers; the Lebanese child relates predominantly to adults.

In summary, the American children are distinguished from the other groups as follows: They receive a larger portion of their praise for assisting persons other than unfortunates (with proportionally less assistance given to the mother by the Americans than by the others). They also exceed the other groups in rewards for performance in sports and games, giving and sharing, and in creativity. The Near Eastern groups receive relatively more praise than the Americans for academic achievement, for assisting unfortunates and for being quiet, polite and obedient.

It will be noted that while there are some differences among the three Near Eastern groups, there is a considerable degree of agreement among them. There is a generalized Near Eastern pattern of child approval which differs considerably from the American pattern. This is shown by Table 4, which contains the correlations between the rank orders of the categories for each pair of groups. It will be noted that the intercorrelations of the Lebanese groups are between .67 and .83, whereas the correlations between each of these and the American group range from —.11 to .32.

TABLE 4

CORRELATIONS BETWEEN THE RELATIVE FREQUENCIES OF CATEGORIES

	Arab	*Armenian*	*Jewish*
American	—.11	.06	.32
Arab		.67	.83
Armenian			.68

If adequate data on values were available, we believe it could be shown that praise is bestowed in accordance with the prevailing values of each group. For example, Near Eastern society is known to be very strongly family-centered. Accordingly we find that children are frequently rewarded for assisting relatives but seldom rewarded for assisting peers or other non-relatives. The exception to this rule is the giving of alms. Arab children are praised for giving alms; American children are not. This difference too accords with adult values. The well-known interest in sports shown by the American adult is paralleled by rewards for participation in games in childhood. Near Eastern interest in sports is slight in comparison with the interest in America; we find Near Eastern children are seldom rewarded for achievement in sports. To give further examples from our data of the probable congruence between adult values and the rewarding of child behavior would unnecessarily repeat material previously presented. While our data do not *prove* that values and habits are inculcated by reward, they seem entirely consonant with this interpretation.

SUMMARY

The critical incident technique was used to investigate the relative frequency with which different kinds of behavior are rewarded in three Near Eastern groups of children and in an American group. Highly significant differences were found between the American group and the Near Eastern groups. While some differences exist among the Near Eastern groups, they have a considerable degree of similarity.

It is suggested that rewarding behavior by praise, and by other means, is an important method of transmitting and inculcating social norms and values. On the basis of our experience the critical incident technique is recommended to psychologists, anthropologists and others as a useful tool in making cross-cultural comparisons. Its usefulness, of course, is not limited to the study of praise.

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PERSONALITY FACTORS IN MIDDLE CHILDHOOD AS REVEALED IN PARENTS' RATINGS

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Over the past few decades, there has been a great deal of speculation about the development of personality in the early and middle years of childhood. Objective research at the childhood level, however, has lagged far behind theory-building. We are faced, in this area, with a great mountain of supposition and a handful of demonstrated facts. We can best grasp the ramifications of this imbalance when we realize that the understanding of child personality is not all that is at stake. Any theory which is concerned with the genesis of adult personality must make many assumptions about the nature of personality at the child level.

The most extensive investigation of child personality has probably been that of Gesell and his associates (9). Relying principally on naturalistic observation, these workers have succeeded in gathering data on a wide variety of behavioral aspects. But their findings have often been limited by inadequate statistical analysis, and they have been little concerned with gathering the correlative data that would be needed to understand fully the structure of personality at any given age level. Their major contribution, however, lies in the establishment of growth curves, which provide considerable insight into typical courses of development in many areas of behavior.

Another major longitudinal study of normal children is that of Macfarlane, Allen and Honzik (15), who relied on the less direct approach of interviewing mothers. They have reported a great deal of useful developmental data relating to behavior problems through the age range of 21 months to 14 years. Other workers, such as Paulsen (16), who have studied normal children have generally employed much smaller samples or dealt with a narrower realm of data.

Other large-scale studies have generally been more vitally concerned with behavior disorders and have utilized the large samples of more deviant subjects available through guidance centers. Notable examples are the studies of Ackerson (1) and Hewitt and Jenkins (11). Ackerson obtained ratings for over 3,000 children on 161 behavior traits, using primarily case

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material which had been gathered in interviews with mothers. He reports correlations of each of the traits with a number of selected criteria relating to intelligence, extensiveness of personality or conduct disturbance, and certain general personality variables.

Hewitt and Jenkins (11) studied the intercorrelations of a variety of behavior-disturbance variables for a somewhat smaller sample, using case records gathered at a guidance center. They confirmed the existence of three hypothetical behavior syndromes by *inspection* of the intercorrelations and related each of these syndromes to a particular type of family background.

In very few of the studies thus far published on early and middle childhood has there been an attempt to isolate the primary variables of personality by appropriate statistical methods. Such exceptions as Koch's studies of preschool children (12, 13) have employed samples which are rather small for precise factor determination. It is hoped that an initial remedy of this situation will be achieved through a research project recently undertaken at the University of Illinois.

The present report is the first of several articles relating to this project. The total research design calls for separate factorization of variables in three realms of data—questionnaire responses, objective-test responses, and behavior ratings. In general plan, this research follows the pattern of research which was first executed at the adult level and later carried out at the 11- to 14-year-old level (4). Ultimately, factors derived from the three realms of data will be related, and an attempt will be made to develop more adequate objective measures of the basic personality variables uncovered. A pertinent practical aim is the development of test instruments which can be readily used on a broad scale in the early grades and which will furnish useful information for educational and psychological guidance.

Procedures

The sample used for most of the research consisted of 198 children drawn from an elementary school in Decatur, Illinois. These children constituted the entire membership of four first-grade and four second-grade classes. The present report concerns only the data obtained from rating schedules sent to the parents of these children. Of the schedules which were returned, a total of 145 proved to be complete and usable for the present analysis. The rated sample to which these corresponded consisted of 68 girls and 77 boys. In age, they ranged from 6 years, 3 months, to 10 years, with a mean of about 7 years, 4 months.

The rating form was constructed with a view toward covering, in a concise way, as broad a range of personality variables as parents might be expected to rate. Most of the form consisted of trichotomous items to which parents were to respond with appropriate check marks. The items read as follows:

1. Prefers to play with younger children—prefers to play with children of same age—prefers to play with older children
2. Seldom or never intentionally destroys property—about as destructive as most children of same age—more destructive than average
3. Seldom or never willingly shares his belongings—about average, as far as sharing is concerned—more generous than average, often shares belongings with others
4. Has many fears, for example, of the dark, of animals, strangers, doctors, etc.—has a few fears—has practically no fears at all
5. Rather quiet—talks about as much as most children of the same age—talks a great deal, something of a "chatterbox"
6. Always on the go, tends to be overactive—about as active as most children of same age—less active than average
7. Rarely cries—cries about as much as most children of same age—cries more than most children
8. Rarely complains—complains about as much as most children of same age—complains a lot, hard to satisfy
9. Dislikes going to school—likes school about as much as most children—likes school very much
10. Talks in a rather quiet voice—speaks in about as loud a voice as most children—talks in a rather loud voice
11. Seldom or never sulks or pouts—sulks or pouts about as much as most children—sulks or pouts more than most children of same age
12. Falls or gets hurt fairly often—has the usual number of accidents for child of same age—seldom or never has an accident or gets hurt
13. Tires fairly quickly—has as much physical endurance as most children of same age—has unusual physical endurance
14. Speech is unusually fluent—repeats and hesitates in speech about as much as most children—stutters or stammers fairly often
15. Pronounces words with unusual precision and clarity—articulates as well as most children—pronounces rather poorly, speech often difficult to understand
16. A little difficult at bedtime, generally resists going to bed—about as reluctant to go to bed as most children—willing to go to bed, perhaps even slightly eager to do so
17. Fairly often tells deliberate untruths—tells an occasional fib—never tells lies
18. Never takes anything that belongs to someone else—has taken a possession of someone else at least once or twice—has stolen things on several occasions
19. Very much afraid of one or more animals—a little afraid of certain animals—no fear of any animals
20. Has no fear of strangers—a little afraid of new people—generally fearful of strangers
21. Afraid of the dark—seems a little uneasy unless at least a dim light is on—has no fear of the dark
22. Never bites fingernails—occasionally bites fingernails—often bites fingernails
23. Often sucks thumb—occasionally sucks on thumb when tired or disappointed—never sucks thumb
24. Often has stomach upsets—occasionally has an upset stomach—never has an upset stomach

25. Often has eliminative disturbances, diarrhea or constipation—has occasional eliminative disturbances—never has eliminative disturbances
26. Seldom or never has colds—has occasional colds—has frequent colds
27. Never has headaches—has occasional headaches—often has headaches
28. Has frequent temper tantrums—has temper tantrums occasionally—seldom or never has temper tantrums
29. Learned to talk somewhat late—learned to talk at about usual time (first word at one year, first sentence at two)—learned to talk earlier than most children
30. A little bossy, likes to tell others what to do—occasionally orders others about—seldom or never orders others about
31. Toilet trained earlier than most children—toilet trained at about the usual time (dry at two years)—toilet trained later than most children
32. Rather solemn, does not laugh very much—laughs about as much as most children of same age—has a very happy, cheerful disposition, laughs a great deal
33. Likes to show off, often calls "Look at me" when not doing anything outstanding—shows off about as much as most children of same age—seldom or never shows off
34. Nearly always does things when told—about as compliant as most children—often resists adult requests or commands
35. Seldom or never daydreams—daydreams occasionally—daydreams a great deal
36. Unusually sociable, seeks company of other children—ordinarily likes to play with other children—often prefers to play alone
37. Does not show much affection—about as affectionate as most children of same age—very affectionate, spontaneously hugs or kisses when meeting or saying goodbye to others
38. Somewhat fussy about food, will eat only certain things—has fairly definite food preferences, but will eat most food if hungry—will eat nearly anything
39. Demands much attention and help from parents—demands moderate amount of attention—self-sufficient, prefers to be on his own
40. Outgoing, mixes freely with other children—a little shy—very shy, bashful, fearful of other children
41. Plays mostly with children of own sex—plays with children of both sexes—plays mostly with children of opposite sex
42. Has many fights with other children—has occasional fights with other children—never gets into fights
43. Adventurous, bold, willing to take a chance—somewhat cautious—very retiring, cautious
44. Very constant interests—interests somewhat changeable—interests fade rapidly, very changeable
45. Nearly always sticks to tasks until they are finished—sometimes fails to complete things—generally quits too easily
46. Excellent health—generally good health—ill fairly often
47. Very imaginative—about as imaginative as most children of the same age—very practical-minded
48. Untidy, careless about appearance of self and belongings—fairly tidy—very neat, tidy, orderly
49. Very frank, expressive—a little secretive, reserved—secretive, keeps many things to self
50. Tends to be jealous of other children—occasionally shows jealousy—seldom or never jealous

51. Frequent bed-wetting—occasional bed-wetting—no bed-wetting
52. Faulty bowel control, soils self—rarely loses control of bowels—good bowel control, never soils self
53. Often has nightmares—occasional disturbing dreams—rarely or never has nightmares
54. Does your child have any physical defects or handicaps? ______
If so, please specify: ______
55. Does this child have any brothers or sisters? ____ If so, is this child: (a) the youngest ____, (b) the oldest ____, (c) neither ____?

The form contained as well a line for the rater's signature. Though the forms were sent to the parents jointly, about 90 per cent were returned with the mother's signature. The remainder contained variously the father's name, the names of both parents, the name of another close relative, or no signature at all. We may assume that the form was typically filled out by the mother with some collaboration on the part of the father.

Before any analysis of the data was undertaken, a response tabulation was obtained for each item. Each of the first 53 items was then dichotomized, the smaller end category being combined with the middle category in each case. Item 54 was scored 2 for "Yes" and 1 for "No." Item 55 was treated as four dichotomous variables which were renumbered 55, 56, 57 and 58 for all subsequent purposes. The "high" ends of these items respectively were "presence of siblings in the family," "youngest child," "oldest child," and "middle child." Three additional variables were also added to the score matrix: sex, grade, and age.

An intercorrelation matrix of phi coefficients was obtained for the 61 variables. Twenty factors were extracted by the complete centroid method. Fourteen of these were judged to be significant on the basis of a combination of criteria. New communalities were therefore computed on the basis of the first 14 factors and the extraction process was repeated. Fifteen factors were retained for rotation.[2]

An initial rotation was executed on an electronic computer with the aid of the oblimax routine. Further oblique rotations were performed with the aid of graphic plots. In the final stages of rotation, evidence of an additional hyperplane appeared between those for factors 4 and 5, and a sixteenth factor (factor 8 in the final matrix) was inserted for the sake of any alternative interpretations it might furnish. A few further rotations failed to take this factor very far from a position essentially intermediate between factors 4 and 5. For final presentation, the factors were rearranged in approximate order of decreasing variance. The final rotated factors are shown in Table 1. The intercorrelations of the reference vectors are shown in Table 2.

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[2] The correlation matrix, unrotated factor matrix, and transformation matrix have been deposited with the American Documentation Institute. Order Document No. 5291 from American Documentation Institute, 1719 N. St. N.W., Washington 6, D.C., remitting $1.25 for 35 mm. microfilm or $1.25 for 6 by 8 in. photocopies.

TABLE I

ROTATED FACTOR MATRIX*

	FACTOR NUMBER															
Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
1	−06	18	−12	17	02	09	11	−18	30	02	04	−01	12	−06	07	−08
2	−10	10	−22	−00	02	−11	−27	01	04	−02	−21	06	−29	−17	10	29
3	25	10	−03	−14	15	−06	09	01	14	−05	04	05	−08	18	06	06
4	00	−06	05	−63	10	−02	−01	41	−03	02	−25	−02	04	−10	05	−19
5	08	05	−27	−01	18	−01	−08	−09	24	01	−10	26	06	13	04	−01
6	−04	−29	29	04	10	25	−06	−09	−11	−27	24	30	02	−01	02	−11
7	−02	−03	05	28	−29	26	−11	01	−08	−02	−10	15	−07	−04	17	−04
8	−06	07	−04	−02	−64	06	08	46	−03	−01	07	−05	07	26	06	04
9	06	23	41	−00	07	−11	−13	−06	19	10	−01	10	−08	02	−03	02
10	03	24	02	−17	−05	26	−07	16	16	−16	−09	16	15	−10	−02	06
11	−07	01	06	09	−43	−00	−08	23	11	−03	−06	09	02	−03	−02	−02
12	−08	−05	27	−14	07	−04	05	03	05	−06	−07	01	06	−05	−33	−09
13	09	06	−08	−03	05	−25	03	−00	25	09	−25	−04	−07	01	−07	01
14	−13	01	−04	13	15	−02	−01	−25	−09	−51	−09	02	01	08	02	05
15	−33	06	−08	02	12	−04	−07	−19	−17	−35	−02	−07	−10	−07	−05	−00
16	07	02	10	03	12	04	07	−11	−01	−11	−03	02	−03	43	10	−07
17	01	−10	03	−05	00	−08	56	12	−20	06	00	04	05	−06	−03	04
18	−15	10	−08	05	−06	13	−32	−01	03	−02	−19	18	−25	11	−11	11
19	06	11	−16	−43	04	−05	−01	26	05	02	−01	−10	−02	−03	−01	−10
20	−08	−27	05	38	−03	−07	−01	−25	−04	07	04	−08	03	06	−02	−00
21	−07	00	−09	−42	00	08	07	34	−29	08	−04	−08	−05	07	08	06
22	01	04	02	−02	05	−18	01	−01	12	16	−00	−26	−04	−01	25	14
23	06	−30	−05	06	−10	−03	−14	05	25	06	00	02	−05	41	−06	05
24	06	31	05	06	06	09	06	−14	−03	−04	05	07	−04	00	−40	05
25	−01	−02	−05	−05	02	−03	−05	03	−07	36	−23	−06	−06	01	−51	05
26	−01	07	−03	04	−17	−15	29	04	11	−40	17	−01	−17	04	05	03
27	−03	−20	07	−16	16	−07	−36	02	06	22	24	−25	−01	−04	22	17
28	−06	07	−19	08	42	07	39	−34	12	−01	01	04	03	−07	04	−00
29	11	13	−04	24	08	30	01	−25	28	23	05	−08	01	−18	15	−04
30	04	−07	09	−01	10	−18	07	01	01	04	−13	−10	01	23	06	29
31	−06	32	−24	09	−07	−40	−01	−00	−08	04	09	−01	07	09	02	25
32	−14	−10	06	−26	38	−05	−08	−05	32	−05	06	25	07	03	−02	−01
33	20	−07	01	13	−01	−03	35	−08	−01	−03	−05	−19	−12	16	−02	01
34	11	−04	−33	−07	−21	01	−19	24	−22	03	07	07	04	−08	−00	18
35	−31	−11	−06	00	−06	−01	−12	−03	37	−09	11	−21	07	09	−12	06
36	−06	−49	07	07	03	05	05	00	10	−20	09	10	12	−01	−06	16
37	−23	15	−04	−15	06	−01	−01	04	27	01	17	04	01	18	−03	05
38	−12	07	−11	07	12	04	07	−10	−11	29	05	02	20	−15	13	−05
39	05	26	13	−12	17	−06	01	−10	04	06	04	−18	−26	−21	−00	−07
40	06	−61	−02	24	05	−02	09	−14	02	−01	−01	−00	00	−18	01	−05
41	12	01	08	00	−02	−05	−21	06	23	08	−21	−09	06	05	10	26
42	12	−08	26	−01	06	01	−06	−03	01	10	09	−07	01	01	−23	06
43	09	−06	17	30	09	16	09	−31	−07	−19	36	−07	10	13	02	05
44	−06	−09	−52	−06	06	−00	11	03	09	02	−05	03	−04	10	03	−01
45	05	04	−56	03	01	−04	−15	−09	−03	02	19	−05	−18	−04	−12	−03
46	15	−06	05	−02	−11	03	05	09	00	−35	02	−06	−07	−10	05	18
47	04	09	−01	03	01	−05	−01	−08	−44	−12	16	−21	06	04	−10	04
48	03	06	21	−08	02	13	18	02	12	−03	20	−04	−19	21	−08	04
49	08	−36	06	10	−14	−03	−04	−01	−09	−10	00	−38	−08	−25	−18	09
50	24	06	03	−14	36	09	33	−05	−07	−07	−14	06	04	−00	32	19
51	08	−14	−01	−05	06	30	14	−00	05	05	06	−09	13	11	04	−14

* Strictly speaking, this matrix contains correlations of variables with reference vectors. These, of course, are proportional to factor loadings within any given factor.

TABLE 1 (*continued*)

ROTATED FACTOR MATRIX*

Variable	FACTOR NUMBER *1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
52	−09	11	16	14	07	32	−07	−19	−05	06	−05	02	16	30	−10	−10
53	−08	−02	12	05	16	03	03	−12	−07	01	−36	04	−09	18	03	01
54	−06	−07	−00	−02	11	07	01	03	03	−03	−02	08	−03	01	13	39
55	−15	−12	02	−02	05	17	−06	−07	−07	−04	−06	−07	−51	−02	07	−02
56	06	−05	00	04	01	−01	02	01	02	05	04	49	−51	01	−00	02
57	−09	03	−04	05	−02	59	−06	−07	−06	05	−05	−35	11	01	01	07
58	−20	−04	07	−04	01	−48	−04	−02	−07	−08	00	−22	14	01	10	−11
59	04	−02	−05	−00	08	01	02	03	−02	−10	−58	−01	07	−04	−04	28
60	−79	10	01	04	−06	03	06	−03	−03	14	−11	−05	−12	02	−03	07
61	−80	08	18	−14	−06	03	06	11	−04	03	04	−04	−05	03	−02	15

* Strictly speaking, this matrix contains correlations of variables with reference vectors. These, of course, are proportional to factor loadings within any given factor.

FINDINGS

In what follows we shall set out the significantly loaded salients, typically cutting off at about .25, but occasionally going down to .20 when this adds clarity. As usual, the variable descriptions will already have been reversed when the loading sign requires it, so that the person reading the list of salient items can take them as being all in the same direction. The phrase

TABLE 2

INTERCORRELATIONS AMONG REFERENCE VECTORS

Factor Number	FACTOR NUMBER *1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
1		−05	−11	05	−05	07	−01	04	−12	−02	07	−08	−03	−03	09	−02
2	..		−05	13	−07	−10	12	−16	−05	05	21	−06	01	−02	05	05
3	..	..		−06	−15	16	−20	10	07	−22	−21	10	−04	04	−16	−14
4	..	..	..		−07	06	−01	−68	02	27	−13	−01	03	04	07	10
5	..	..	..	..		−06	−06	−61	14	−01	00	06	02	−14	16	14
6	..	..	..	..	..		−08	−01	−15	−10	−12	11	01	10	−02	−08
7	..	..	..	..	..	..		09	−01	−22	04	−02	06	00	22	−13
8	..	..	..	..	..	..	..		−13	−10	−01	09	03	08	−06	01
9	..	..	..	..	..	..	..	..		−04	−02	14	−03	09	−07	−00
10	..	..	..	..	..	..	..	..	..		−02	−13	04	−15	02	18
11	..	..	..	..	..	..	..	..	..	..		−11	04	−06	02	−08
12	..	..	..	..	..	..	..	..	..	..	..		−14	09	−04	−04
13	..	..	..	..	..	..	..	..	..	..	..	..		14	18	01
14	..	..	..	..	..	..	..	..	..	..	..	..	..		02	02
15	..	..	..	..	..	..	..	..	..	..	..	..	..	..		09
16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	

first given for each item will be that corresponding to the positive pole of the factor. As usual, also, the variables and the tentative factor titles will be presented in bipolar fashion. The titles assigned to familiar factors are those introduced and discussed in another recent publication (4).

The integration of the present findings with others requires methodological considerations which have been discussed elsewhere (5). Space limitations prohibit full consideration of factor-matching techniques here. Essentially we have begun with a set of hypotheses about some 14 personality factors in the rating field, but the design does not prevent the appearance of other factor patterns than these if they exist. The problem is primarily that of interpreting the present fixed 7-year-old factors in terms of factors known for the adult world, since those known at the 11-year-old level have only, as yet, been represented once or twice (4) and below that there is only the published work of Koch (12, 13). Since the gap from 6 years to the adult period is large, we intend to be guided by any suggestions that the work of Gruen and Koch may provide regarding modifications of recognized factors at the childhood level. Unfortunately, factor matching requires identical markers, or markers as identical as the age range permits, and except in our own studies this matching of markers has not been observed. Even there we are in some difficulties, because of the special modifications in shaping variables for rating by parents, and because the Gruen rating was done by peers, whereas this was done by adults. Ultimately, the developmental identification of factors will be certain only when cross-sectional analyses have been made at about two-year intervals all the way down from the adult period. Accordingly, our present identifications are tentative, though they will be strengthened when the remainder of our data comes in on the 6- and 7-year-old cross-sectional study and on the 4- and 5-year-old cross-sectional study (7). In the technique of this matching, we must also consider the fact that the present arrangement emphasizes intra-familial variance relative to inter-familial variance, since the unavoidable vagueness of the normative standard favors intra-familial comparisons on the part of parent raters. In addition, it might be contended that our procedures favor the appearance of factors which are essentially a function of projected parental personality rather than child personality. The evidence for this sort of contamination of rating factors, however, is rather insubstantial. In the present case, comparisons with factors from other media suggest that parental rating biases have not been manifested in this way to a significant extent.

Factor 1. Intelligence-vs.-Retardation-Frustration (B)

61. Age—younger, vs. older (—.80),
60. Grade—first, vs. second (—.79),
15. Pronounces words with unusual precision and clarity, vs. pronounces rather poorly, speech often difficult to understand (—.33),
35. Seldom or never daydreams, vs. daydreams a great deal (—.31),

3. More generous than average, often shares belongings with others, vs. seldom or never willingly shares his belongings (+.25),
50. Seldom or never jealous, vs. tends to be jealous of other children (+.24),
37. Does not show much affection, vs. very affectionate, spontaneously hugs or kisses when meeting or saying goodbye to others (—.23),
33. Seldom or never shows off, vs. likes to show off, often calls "Look at me" when not doing anything outstanding (+.20).

It is curious that our first and largest factor should initially appear the most obscure in meaning. However, the explanation of its obscurity is almost certainly that it involves strong selection effects. In the two-year, two-grade range of our sample the academically more retarded children tend to be in the second grade and older. Consequently, it is almost certain that we have here picked out the general intelligence factor (Spearman's *g*, our *B* or second-order factor among primary abilities). As the alphabetical position *B* indicates, in an age-homogeneous population it is usually practically the largest factor, as it roughly is here.

In personality terms, it is most clearly perceived at the negative pole, where we see that the lack of recognition experienced by the dull child increases his emotional needs for affection, for self-assertion, for phantasy and for security. Our previous factorizations have shown this moderate accumulation of personality variables around the intelligence factor—poise, conscientiousness and wider interests being associated with the positive pole.

Factor 2. Parmia-vs.-Threctia (H)

40. Outgoing, mixes freely with other children, vs. very shy, bashful, fearful of other children (—.61),
36. Unusually sociable, seeks company of other children, vs. often prefers to play alone (—.49),
49. Very frank, expressive, vs. secretive, keeps many things to self (—.36),
31. Toilet trained later than most children, vs. toilet trained earlier than most children (+.32),
24. Never has an upset stomach, vs. often has stomach upsets (+.31),
23. Often sucks thumb, vs. never sucks thumb (—.30),
6. Always on the go, tends to be overactive, vs. less active than average (—.29),
20. Has no fear of strangers, vs. generally fearful of strangers (—.27),
39. Self-sufficient, prefers to be on his own, vs. demands much attention and help from parents (+.26),
10. Talks in a rather loud voice, vs. talks in a rather quiet voice (+.24),
9. Likes school very much, vs. dislikes going to school (+.23),
27. Never has headaches, vs. often has headaches (—.20).

This factor could only be one of the two major cyclothymia-vs.-schizothymia factors, *A* or *H*, and the latter is strongly indicated because the negative, threctic, end of the factor has none of the obstructive, rigid, cantankerous qualities which characterize schizothymia. It is appropriate that this should be one of the largest factors, since the two cyclothyme-schizothyme factors are in general among the largest, though *H* has typically, as its alphabetical position indicates, been somewhat lower than this.

Factor 3. Superego Strength (G)

45. Nearly always sticks to tasks until they are finished, vs. generally quits too easily (—.56),
44. Very constant interests, vs. interests fade quickly, very changeable (—.52),
9. Likes school very much, vs. dislikes going to school (+.41),
34. Nearly always does things when told, vs. often resists adult requests or commands (—.33),
6. Less active than average, vs. always on the go, tends to be overactive (+29),
5. Rather quiet, vs. talks a great deal, something of a "chatterbox" (—.27),
12. Seldom or never has an accident or gets hurt, vs. falls or gets hurt fairly often (+.27),
42. Never gets into fights, vs. has many fights with other children (+.26),
31. Toilet trained earlier than most children, vs. toilet trained later than most children (—.24),
2. Seldom or never intentionally destroys property, vs. more destructive than average (—.22),
48. Very neat, tidy, orderly, vs. untidy, careless about appearance of self and belongings (+.21).

The only possible doubt that could arise regarding this pattern is whether it is the *C* pattern of ego strength or the *G* pattern of superego strength, but these alternatives always present a difficult choice when one tries to match factors from one study with those of another. In the first place it is an extensive pattern, as *G*, but more especially *C*, should be. Commonly one distinguishes on the grounds that *C*, ego strength, is more loaded in "calm-vs.-emotional" and "freedom from neurotic symptoms," while *G* is more loaded in "persevering," "conscientious," "stable in interests," and "insistent on order." In spite of the fact that *C*, Factor 7, has some ethical flavor, which we shall explain, the essential markers for *G* are so regularly and highly placed in the present factor that finally we had no doubt in identifying it as *G*. The identification is strongly confirmed by the same crucial markers appearing also in Gruen's *G* pattern for 11-year-olds (4) and the *G* pattern in the present research in teachers' ratings (6).

The additions from this study to the "within the home" *G* pattern are "likes going to school," "quiet" and "toilet trained early." *G* does not constitute a *temperamental contribution* to early toilet training, as does factor *H*; but, if our general hypothesis on *G* is correct, it is rather an *educational influence* from a good parent-child relationship and an orderly home.

Factor 4. Anxious Depression or Superego Proneness (O)

4. Has many fears, for example, of the dark, of animals, strangers, doctors, etc., vs. has practically no fears at all (—.63),
19. Very much afraid of one or more animals, vs. no fear of any animals (—.43),
21. Afraid of the dark, vs. has no fear of the dark (—.42),
20. Generally fearful of strangers, vs. has no fear of strangers (+.38),

43. Very retiring, cautious, vs. adventurous, bold, willing to take a chance (+.30),
7. Cries more than most children, vs. rarely cries (+.28),
32. Rather solemn, does not laugh very much, vs. has a very happy, cheerful disposition, laughs a great deal (—.26),
29. Learned to talk earlier than most children, vs. learned to talk somewhat late (+.24),
40. Very shy, bashful, fearful of other children, vs. outgoing, mixes freely with other children (+.24).

This is the typical pattern of fear combined with depressiveness which has long been recognized in the questionnaire realm as *O* factor, though it has never stood out too clearly in ratings. In the questionnaire it has had a tendency to be confused with *C*(—) or *Q*4 (3). Here the fearfulness is paramount, amounting to a phobic or anxiety hysteric picture similar to the adult factor when it gets into the abnormal range, but the depressiveness is also suggested by the crying. In personality theory it remains uncertain whether this is a general dispositional timidity, or whether it is associated with stronger superego development.

Factor 5. Cyclothymia-vs.-Schizothymia (A)

8. Rarely complains, vs. complains a lot, hard to satisfy (—.64),
11. Seldom or never sulks or pouts, vs. sulks or pouts more than most children of the same age (—.43),
28. Seldom or never has temper tantrums, vs. has frequent temper tantrums (+.42),
32. Has a very happy, cheerful disposition, laughs a great deal, vs. rather solemn, does not laugh very much (+.38),
50. Seldom or never jealous, vs. tends to be jealous of other children (+.36),
7. Rarely cries, vs. cries more than most children (—.29),
34. Nearly always does things when told, vs. often resists adult requests or commands (—.21).

On the left side there is to be inferred, rather than directly read, the general quality of cheerful complaisance, cooperativeness and adaptability characteristic of the cyclothyme pole of factor *A* (4). The negative pole has a little more emphasis on jealous and "paranoid" than is usual in *A*(—) and does not directly show sufficient loading on reserved, rigid, cautious and secretive. However, we have "solemn," "resists adult requests" and a loading of .14 in the right direction on "secretive." Nevertheless, in view also of the failure of *L* (protension or paranoia) in this series, the hypothesis must be entertained that, due perhaps to one factor too few being extracted, the small-variance factor *L* has attached itself to the very similar "cooperative" loading pattern of *A*, in a single factor. On the other hand, the only early childhood pattern previously recorded in this area, by Koch (13), had been matched (2) with *A*(—), and this had highest loadings in pouting and sulking and in physical attack on other children, agreeing well with the present identification with *A*(—).

Factor 6. Oldest-Child, Parental-Training Pattern

57. The oldest child, vs. not the oldest child (+.59),
58. Not a middle child, vs. a middle child (—.48),
31. Toilet trained earlier than most children, vs. toilet trained later than most children (—.40),
52. Good bowel control, never soils self, vs. faulty bowel control, soils self (+.32),
29. Learned to talk earlier than most children, vs. learned to talk somewhat late (+.30),
51. No bed-wetting, vs. frequent bed-wetting (+.30),
7. Cries more than most children, vs. rarely cries (+.26),
10. Talks in a rather loud voice, vs. talks in a rather quiet voice (+.26),
6. Less active than average, vs. always on the go, tends to be overactive (+.25),
13. Tires fairly quickly, vs. has unusual physical endurance (—.25).

From the nature of the variables we suspect that this should be considered not so much a general personality dimension as a set of relatively specific habits associated with being the oldest child, as distinct particularly from a middle child. The higher loadings involve habits considered acceptable adjustments by the parents, and the successful imposition suggests that the amount of parental contact and training given the first child is greater than with later children and tends to establish the required habits relatively firmly and early. Conceivably the "discouraged" responses at the lower loadings, tiring easily and crying easily, are reflections of the conflict introduced by the training, or of later displacement by younger children.

Factor 7. Ego Strength-vs.-General Emotionality (C)

17. Never tells lies, vs. fairly often tells deliberate untruths (+.56),
28. Seldom or never has temper tantrums, vs. has frequent temper tantrums (+.39),
27. Never has headaches, vs. often has headaches (—.36),
33. Seldom or never shows off, vs. likes to show off, often calls "Look at me" when not doing anything outstanding (+.35),
50. Seldom or never jealous, vs. tends to be jealous of other children (+.33),
18. Never takes anything that belongs to someone else, vs. has stolen things on several occasions (—.32),
26. Has frequent colds, vs. seldom or never has colds (+.29),
2. Seldom or never intentionally destroys property, vs. more destructive than average (—.27),
41. Plays mostly with children of own sex, vs. plays mostly with children of opposite sex (—.21).

As pointed out under Factor 3, this and 3 seem to constitute the closely allied factors *G* and *C*. While there is not the least doubt about finally identifying Factor 3 as the *G* pattern, there are some slight discrepancies here from the usual ego strength pattern as previously so classified (2) from the data, especially, of Hart and Jenkins (10), McDonough (14) and Eysenck (8). In the first place this has less variance than usual (seventh instead of third rank) and in the second it stresses regard for ethics a little more than stability and realism. The first discrepancy can readily be understood in terms of the known hereditary contribution (4) to *C*, which would reduce the within-family variance here. The second is almost certainly due to a true modification of the pattern as we proceed to earlier ages, as already evidenced by Burt's analysis (2). These suggest that the instability of *C*— shows itself in younger children in more overt disturbances, particularly in expressions of what Burt calls the sthenic emotions (anger, assertiveness, sex and sociability), which would register as anti-social and anti-ethical, but through no particular interindividual variance in ethical teaching. The possibility of some intrusion of ethical valuation also arises because of the probability that a low *C* child is in fact being rated by a low *C* parent, allergic to breaking of ethical rules (4).

This analysis adds, besides the above change of emphasis, "headaches," presumably a result of the autonomic upsets and the beginning of the hypochondria observed in the pattern later (4), and "tendency to play with children of opposite sex."

Factor 8. Dominance-vs.-Submissiveness (E)

8. Complains a lot, hard to satisfy, vs. rarely complains (+.46),
4. Has practically no fears at all, vs. has many fears, for example, of the dark, of animals, strangers, doctors, etc. (+.41),
21. Has no fear of the dark, vs. afraid of the dark (+.34),
28. Has frequent temper tantrums, vs. seldom or never has temper tantrums (—.34),
43. Adventurous, bold, willing to take a chance, vs. very retiring, cautious (—.31),
19. No fear of any animals, vs. very much afraid of one or more animals (+.26),
14. Speech is unusually fluent, vs. stutters or stammers fairly often (—.25),
20. Has no fear of strangers, vs. generally fearful of strangers (—.25),
29. Learned to talk somewhat late, vs. learned to talk earlier than most children (—.25),
34. Often resists adults requests or commands, vs. nearly always does things when told (+.24),
11. Sulks or pouts more than most children of same age, vs. seldom or never sulks or pouts (+.23).

This factor has been rather difficult to separate from factors 4, 5, and 11, i.e., *A*, *O* and *I*; but it should be noted that there has been difficulty in separating *E* from *A* in earlier studies. The general sense of the factor as a dominance pattern is unmistakable. The child is not afraid of anything, is bold and willing to take a chance, resists adult requests and makes a direct expression of complaints. The element of doubt arises from the possibility that it could be *H* factor rather than *E*, because of the emphasis on "unafraid"—but *H* has already been recognized in this series—and from the fact that variable 30, direct "bossiness," has only a moderate loading here. It is possible—even probable—that some better simple structure position remains to be found, especially through rotations of *E* on 11 and 5, which will raise assertiveness and lower fearlessness. However, on the other hand, dominance is a pattern which we should expect on theoretical grounds to vary a good deal with age, and which we already know on empirical grounds changes rather markedly in other circumstances, e.g., according to the sex of the sample. It is perhaps reasonable to suppose that a dominant disposition placed in the dependent situation and more threatening world of the young child will show itself more in fearlessness, temper tantrums and complaints than in successful expressions of social dominance. In previous factorings of dominance, in the child range, disobedience and anti-social behavior have been rather more prominent than here.

Factor 9. Autia (M) (Possibly with (K))

47. Very imaginative, vs. very practical-minded (—.44),
35. Daydreams a great deal, vs. seldom or never daydreams (+.37),
32. Has a very happy, cheerful disposition, laughs a great deal, vs. rather solemn, does not laugh very much (+.32),
1. Prefers to play with older children, vs. prefers to play with younger children (+.30),
21. Afraid of the dark, vs. has no fear of the dark (—.29),
29. Learned to talk earlier than most children, vs. learned to talk somewhat late (+.28),
37. Very affectionate, spontaneously hugs or kisses when meeting or saying goodbye to others, vs. does not show much affection (+.27),
23. Never sucks thumb, vs. often sucks thumb (+.25),
13. Has unusual physical endurance, vs. tires fairly quickly (+.25),
5. Talks a great deal, something of a "chatterbox," vs. rather quiet (+.24),

If this factor had not occurred in a series which already contained the surgency-desurgency factor, number 12 below, one could be tempted to conclude that its emotional expressiveness and spontaneity express the surgency pattern. However, the high loadings of imaginativeness and daydreaming do not fit the surgency pattern very well and there is some question whether variable 21, fear of the dark, and 37, affectionateness, have previously been sufficiently proven part of the surgency pattern. While the combination of cheerful disposition, talkativeness, and energetic endurance make it impossible to deny surgency as an alternative hypothesis, the fact that an almost identical pattern with the present has also been found in teacher ratings (6), again distinct from *F*, Surgency, suggests that we must proceed in a radically different direction. Two factors, not located elsewhere in either series, have strong and, in the present state of knowledge, almost equal claim. These are *K*, Comention or socialized, intellectual interest, and *M*, Autia, or emotional-intellectual and esthetic interests. The former has "love of school" central to it, and has been mistaken for intelligence. The latter, previously found only in adults, is there characterized by high imaginativeness, unconventional self-sufficiency, and intellectual interests—and at the opposite pole by practicality, matter-of-fact realism and self-control and narrower interests.

The present pattern is nearer *M* than *K*; but the equivalent teacher-rating pattern (6), with its greater emphasis on classroom virtues, respect for property etc., could equally be *K*. It is understandable that the more intimate parental relation would bring out the higher role of imaginativeness and free creative daydreaming. In any case, a good *K* pattern already exists in this series (factor 10). Assuming factor 9 is *M*, it throws a wealth of new light on that hitherto enigmatic "bohemian, imaginative, impractical" pattern in adult behavior, stressing now its subjective, creative, emotional and, indeed, lyrical qualities, [and, incidentally, accounting for its significantly higher value in researchers and artistically creative students (*see* Cattell and Drevdahl in (4)].

Factor 10. Comention-vs.-Abcultion (K)

14. Speech is unusually fluent, vs. stutters or stammers fairly often (—.51),
26. Seldom or never has colds, vs. has frequent colds (—.40),
25. Never has eliminative disturbances, vs. often has eliminative disturbances, diarrhea or constipation (+.36),
15. Pronounces words with unusual precision and clarity, vs. pronounces rather poorly, speech often difficult to understand (—.35),
46. Excellent health, vs. ill fairly often (—.35),
38. Will eat nearly anything, vs. somewhat fussy about food, will eat only certain things (+.29),
6. Always on the go, tends to be overactive, vs. less active than average (—.27),
29. Learned to talk earlier than most children, vs. learned to talk somewhat late (+.23),
27. Often has headaches, vs. never has headaches (+.22),
36. Unusually sociable, seeks company of other children, vs. often prefers to play alone (—.20).

The *K* pattern, found with some fluctuation in adult population samples, has stood out strongly in certain child groups, particularly in the questionnaire area. The name is intended to imply a cooperative attitude towards conventional learning, as opposed to a rigid resistance to the culture pattern. Typically, it has a liking for school, an interest in cultural values, a willingness to do the right thing, e.g., in table manners, and a regard for social obligations, especially at the level of manners. This "intellectual striving" is probably consistent with a fairly stable family environment in which social stimulation is directed towards educational accomplishment, likely to show itself in the language development. Previous work has shown it to be quite independent of general intelligence (4). Additions to knowledge of the pattern here are the emphasis on speech articulation and fluency, and on good health.

Factor 11. Premsia-vs. Harria, Femininity Contribution (I)

59. Sex of child—female, vs. male (—.58),
43. Very retiring, cautious, vs. adventurous, bold, willing to take a chance (+.36),
53. Often has nightmares, vs. rarely or never has nightmares (—.36),

4. Has many fears, for example, of the dark, of animals, strangers, doctors, etc., vs. has practically no fears at all (—.25),
13. Tires fairly quickly, vs. has unusual physical endurance (—.25),
6. Less active than average, vs. always on the go, tends to be overactive (+.24),
27. Often has headaches, vs. never has headaches (+.24),
25. Often has eliminative disturbances—diarrhea or constipation, vs. never has eliminative disturbances (—.23),
2. Seldom or never intentionally destroys property, vs. more destructive than average (—.21),
41. Plays mostly with children of own sex, vs. plays mostly with children of opposite sex (—.21),
48. Very neat, tidy, orderly, vs. untidy, careless about appearance of self and belongings (+.20).

This factor has obviously the character of feminine sensitivity versus masculine toughness. There seems no alternative but to identify it with the *I* factor, long considered (4) the embodiment of William James' tender-vs.-tough-minded continuum. However, there is a complication because we discover one *I* factor associated with femininity, and one not so associated. This sort of duplication constitutes a systematic problem in intra-familial ratings.

Factor 12. Surgency-vs.-Desurgency: Favored-Position Contribution (F')

56. The youngest child, vs. not youngest child (+.49),
49. Very frank, expressive, vs. secretive, keeps many things to self (—.38),
57. Not the oldest child, vs. oldest child (—.35),
6. Less active than average, vs. always on the go, tends to be overactive (+.30),
22. Never bites fingernails, vs. often bites fingernails (—.26),
5. Talks a great deal, something of a "chatterbox," vs. rather quiet (+.26),
27. Never has headaches, vs. often has headaches (—.25),
32. Has a very happy, cheerful disposition, laughs a great deal, vs. rather solemn, does not laugh very much (+.25),
58. Not a middle child, vs. a middle child (—.22),
35. Seldom or never daydreams, vs. daydreams a great deal (—.21),
47. Very imaginative, vs. very practical-minded (—.21).

With one exception, variable number 6, this is undeniably the pattern of surgency-vs.-desurgency. The reader will recall from the discussion of factor 9 above that this makes two surgency-like factors in one series, a situation which has been met and commented on before (4). In this case the main factor is tied up with the family position while the former suspected pattern was not. Since we know that surgency is largely environmentally determined, and, indeed, is the product of a secure and indulgent environment (4), it makes sense that the family position should play such a role and have such a loading. This must carry the definite assumption for future investigation that in the modern, limited family, the youngest tends to occupy a benignly favored position, relatively protected from responsibilities and standards. Since surgency decreases with age (4) some of the correlation could be due to age alone. Incidentally, in this factor and any others where a variable of 100 per cent reliability is mixed with ratings of less than perfect reliability it will be understood that the former is boosted to a position in the factor pattern which must be discounted to get proper perspective. The pattern is essentially one of surgency-desurgency, with some age and position correlation thrown in. The only novelties are the "less active than average" and "seldom bites fingernails," which fit the basic interpretation of the "placid" surgency previously made (4) as a carefree "ease," resulting from fewer environmental demands and responsibilities.

Factor 13. Only Child Pattern

55. Only child, vs. not an only child (—.51),
56. Not the youngest child, vs. the youngest child (—.51),
2. Seldom or never intentionally destroys property, vs. more destructive than average (—.29),
39. Demands much attention and help from parents, vs. self-sufficient, prefers to be on his own (—.26),
18. Never takes anything that belongs to someone else, vs. has stolen things on several occasions (—.25),
38. Will eat nearly anything, vs. somewhat fussy about food, will eat only certain things (+.20).

This pattern agrees with most research done on the only child, showing more correct, but also more dependent, behavior. This scarcely has the magnitude of a primary personality factor, however, for the loadings except for the positional variables 55 and 56 are very modest. It is a minor, and possibly transient, pattern associated with the only child's position.

Factor 14. Premsia-vs.-Harria (I)

16. Willing to go to bed, perhaps even slightly eager to do so, vs. a little difficult at bedtime, generally resists going to bed (+.43),
23. Never sucks thumb, vs. often sucks thumb (+.41),
52. Good bowel control, never soils self, vs. faulty bowel control, soils self (+.30),
8. Complains a lot, hard to satisfy, vs. rarely complains (+.26),
49. Very frank, expressive, vs. secretive, keeps many things to self (—.25),
30. Seldom or never orders others about, vs. a little bossy, likes to tell others what to do (+.23),
39. Demands much attention and help from parents, vs. self-sufficient, prefers to be on his own (—.21),
48. Very neat, tidy, orderly, vs. untidy, careless about appearance of self and belongings (+.21).

Although this is clearly some factor of properness and fastidiousness, its identification with the *I* factor is not too certain, principally because one can see superego or *G* factor components. However, it has two of the main markers, plaintiveness and demandingness, of the *I*+ factor, together with the fastidiousness. Moreover, it suggests as a whole that over-protectiveness of the child, which we have considered theoretically to be the essential source of the premsia pattern (4).

Factor 15. Ergic Tension (Q4) (or possibly (D))

25. Often has eliminative disturbances—diarrhea or constipation, vs. never has eliminative disturbances (—.51),
24. Often has stomach upsets, vs. never has an upset stomach (—.40),
12. Falls or gets hurt fairly often, vs. seldom or never has an accident or gets hurt (—.33),
50. Seldom or never jealous, vs. tends to be jealous of other children (+.32),
22. Often bites fingernails, vs. never bites fingernails (+.25),
42. Has many fights with other children, vs. never gets into fights (—.23),
27. Often has headaches, vs. never has headaches (+.22).

This pattern is definite enough, but the only pattern seen before to resemble it closely is that in the questionnaire factor *Q*4, or ergic tension (4). Either the child is living in an atmosphere of excessive ergic stimulation, including stimulation of anxiety, or else is constitutionally unduly reactive autonomically. In both cases the result seems to be a psychosomatic tension generated by insufficiently discharged drive level, as defined in *Q*4. However, in future research the hypothesis must also be entertained that this is the *D* factor (4) of excitability and insecurity.

Factor 16. Insecurity from Physical Handicap

54. Child has physical defects or handicaps, vs. child does not have any physical defects or handicaps (+.39),
2. More destructive than average, vs. seldom or never intentionally destroys property (+.29),
30. Seldom or never orders others about, vs. a little bossy, likes to tell others what to do (+.29),
59. Sex of child—male, vs. female (+.28),
41. Plays mostly with children of opposite sex, vs. plays mostly with children of own sex (+.26),
31. Toilet trained later than most children, vs. toilet trained earlier than most children (+.25).

Again we have a factor of relatively minor variance, but one which seems understandable in terms of an insecurity, or perhaps immaturity, pattern generated by physical handicap. The very slight sex association may simply spell the greater insecurity-creating effects of physical handicaps occurring in male children.

Summary

Behavior ratings were obtained from the parents of 145 first- and second-grade children. Sex, grade, and age were added to the rating variables making a total of 61 variables which were intercorrelated. After an initial factor analysis of the phi matrix, communality estimates were revised, and a second factor analysis was done. Rotation was performed initially on 15 factors, but when a hyperplane for a sixteenth appeared it also was incorporated.

The factors have quite good simple structure, as shown by the percentage of variables in the hyperplane, and contain sufficient variables sampled from the personality sphere to permit tolerably exact matching procedures and conclusions with respect to other studies. However, the present matches are to be considered tentative rather than final, because they have later to be considered in relation to four or five other studies on the 6- and 7-year-olds and 4- and 5-year-olds which are now in process of analysis. Furthermore, the interpretation must be considered with due regard to whatever distortions may arise from the rating done by parents, mainly mothers, who necessarily will interpret certain terms a little differently from a peer group and who will in any case be dealing primarily only with a range of variance within their own families. Allowing for such distortions, there seems to have been remarkably little difficulty in interpreting 10 (and possibly 12) of these factors in terms of well known primary personality factors. These factors, expressed in their usual alphabetical symbols indicating order of declining variance, are *A, B, C, E, F, G, H, I, K, O* and possibly *M* and *Q*4. This leaves the hypothetical factors *D, J* and *N* overlooked. *D* has always been a difficult factor to locate because it affects so much of personality that it leaves very little in the hyperplane, and the paranoid factor, *L*, may be compounded with *A* or it may be a pattern which develops much more with age and is not evident so much in young children, as we definitely suspect with *N*.

The chief additions to our present knowledge are:

1. That the personality factor structure in younger children does not appear to be noticeably less complex than for adults, involving about the same number of factors.

2. That the identical primary personality factors recognized in adults and 11-year-old children also seem in the main recognizable in 6- and 7-year-old children.

3. That, in addition to the primary personality factors, one can recognize certain habit collections specifically associated with the sex of the child and the family position. These are of small variance, and in two cases they seem to operate in producing changes along personality dimensions already defined in independence of these specific influences. Notably femininity seems to produce a component highly similar to the premsia or sensitivity factor, *I*, and the youngest position in family tends to help the formation of the surgency, or *F*, pattern.

4. That certain slight differences of emphasis appear to exist between the adult and child patterns which, if verified by further research, have considerable importance for the understanding of developmental processes.

The relation of these *L*-data factors (4) to questionnaire (*Q*-data) and objective test (*T*-data) factors, and to patterns derived from independent raters will be more systematically and exactly studied when the contributory specialized studies have been published.

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THE STATUS OF ADOLESCENTS IN AMERICAN SOCIETY: A PROBLEM IN SOCIAL IDENTITY[1]

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Adolescents occupy an ambiguous position in American society. As a phase in personal and social development adolescence is a recognized period experienced by every American youth. As a status in the social structure, however, it is loosely defined at both entry and exit transition points and offers a set of vague and often conflicting roles. The age behaviors expected of adolescents by adults are viewed by society with ambivalence and anxiety. With the possible exception of old age, no other phase of individual development is so clearly marked by negative connotations and lack of positive sanctions.

It is obviously one of the central objectives of socialization to bring pre-adult members to equal status in the adult society. However, the difficulty of achieving this transition is affected by the subordinate individual's perception of the relative position of his status group in the structure of the society and by the attitudes of adults and their willingness to permit expressions of autonomy on the part of subordinate members.

Although there has been little systematic research on the status of adolescents in American society, as viewed by adults or by adolescents themselves, it is generally assumed that the attitudes of the society toward its teen-age members are characteristically depreciatory and often hostile. Our preliminary interviews with adolescents revealed their awareness of a presumed inferior reputation among adults. Adolescents frequently expressed the belief that they are, as a group, subject to condemnation, criticism and general devaluation by adults and that there exists among adults a stereotype of adolescents as sloppy, irresponsible, unreliable, inclined toward de-

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TABLE 1

MEAN ITEM RESPONSE BY ADOLESCENTS

	RATINGS OF		PREDICTIONS OF ADULTS' RATINGS OF	
Traits	*Teen-Agers*	*Adults*	*Teen-Agers*	*Adults*
1. Neat–untidy	4.81	5.88	3.17	5.68
2. Patient–impatient	2.94	4.72	2.23	5.06
3. Cooperative–uncooperative	4.59	5.38	3.37	5.86
4. Serious–frivolous	4.50	5.56	2.70	5.41
5. Responsible–irresponsible	4.62	6.22	2.76	6.07
6. Courteous–rude	4.81	5.81	3.17	5.83
7. Mature–immature	4.62	6.06	2.87	6.00
8. Cautious–impulsive	2.69	5.44	2.10	5.28
9. Consistent–inconsistent	3.56	5.44	2.37	5.76
10. Grateful–ungrateful	4.81	5.72	3.00	5.83
11. Reliable–unreliable	5.19	5.97	3.40	5.93
12. Stable–unstable	4.35	5.47	2.90	5.93
13. Moral-immoral	5.16	5.53	3.80	5.79
14. Self-directed–easily influenced	3.72	5.28	3.17	5.68
15. Respectful–disrespectful	4.78	5.75	3.37	5.79
16. Unspoiled–spoiled	3.97	5.03	2.67	5.72
17. Considerate–inconsiderate	4.44	5.62	3.07	5.83
18. Self-controlled–wild	4.59	5.88	2.80	6.11
19. Thoughtful–thoughtless	4.66	5.66	3.13	5.86
20. Loving–angry	4.81	5.69	3.60	5.72
Means	4.38	5.60	2.80	5.71

but the adolescent subjects gave much higher mean ratings to adults than did the parents. The mean rating on all items by adolescent subjects was 5.60; that of the parents was 4.86. Adolescents rated adults higher than did the parents on each of the 20 items. Sixteen of these item differences were statistically significant. Only items 4, 8, 13, and 19 showed insignificant differences.

The Extent of Perceived Differences between Teen-Agers and Adults

The difference between each group's rating of teen-agers and its rating of adults (Tables 1 and 2, col. 2 minus col. 1) can be considered an expression of the distance in status as it is differently perceived by the two groups. It has already been noted that teen-agers are rated in a mildly favorable manner by both groups, and that adults are believed to be superior to teen-agers. However, adolescents accentuate in their ratings the relative superiority of adults over teen-agers. In scale terms, the distance between adults and teen-agers is perceived by the adolescents to be almost twice as large as that seen by parents.

TABLE 2

MEAN ITEM RESPONSE BY PARENTS

	Ratings of		Predictions of Teen-Agers' Ratings of	
Traits	*Teen-Agers*	*Adults*	*Teen-Agers*	*Adults*
1. Neat–untidy	3.98	5.00	4.93	5.00
2. Patient–impatient	2.48	3.69	5.14	2.58
3. Cooperative–uncooperative	4.45	4.84	5.96	3.84
4. Serious–frivolous	4.80	5.20	5.62	5.82
5. Responsible–irresponsible	4.87	5.24	6.02	6.09
6. Courteous–rude	4.44	4.86	5.48	4.30
7. Mature–immature	3.98	5.02	5.60	5.36
8. Cautious–impulsive	2.72	4.78	4.11	5.18
9. Consistent–inconsistent	3.57	4.18	5.53	3.18
10. Grateful–ungrateful	4.59	4.82	5.60	3.66
11. Reliable–unreliable	4.98	5.10	5.91	4.93
12. Stable–unstable	4.45	4.76	5.64	4.98
13. Moral–immoral	5.98	5.46	5.87	5.51
14. Self-directed–easily influenced	4.18	4.32	5.85	5.18
15. Respectful–disrespectful	4.50	5.22	5.56	4.70
16. Unspoiled–spoiled	3.70	4.31	5.54	4.22
17. Considerate–inconsiderate	4.22	4.78	5.66	3.77
18. Self-controlled–wild	4.62	5.34	5.32	5.16
19. Thoughtful–thoughtless	4.09	5.24	5.54	4.49
20. Loving–angry	4.83	5.14	5.32	4.57
Means	4.27	4.86	5.51	4.63

These differences apparently represent the different concerns of the two groups. Both groups share the opinion that teen-agers have a relatively long way to go before they reach the adult level of self control. However, the adolescent subjects seem to feel that they are much less "responsible" and less "self-directing" than adults, while the parents seem relatively unconcerned about these characteristics.

Expected Reputation

The Attempt to Predict the Ratings of the Other Group

The adolescent's view of his status in the social system is a function of the reputation he anticipates from adults as well as his own view of his age group. It is significant, then, that the adolescents of our sample predict that teen-agers will be evaluated in a generally unfavorable manner by the adult group.

All of the ratings which the adolescent subjects anticipate will be given to teen-agers by adults fall below the scale mean (Table 1, col. 3). Adolescents expect that the lowest ratings will describe them as impulsive, impatient, inconsistent, spoiled, frivolous, irresponsible, and wild. In contrast to the unfavorable reputation adolescents believe the teen-ager has, the parents in the sample believe that their own status group has a mildly favorable reputation among teen-agers.

Disparity between Expected Reputation and Self-Ratings

The difference between the adolescents' own rating of teen-agers and their predictions of the average adults' rating of teen-agers can be regarded as a measure of the extent to which teen-agers will feel underrated or depreciated. The data indicate that adolescents expect to be underrated on each of the items. On 18 of the items (all except 8 and 14) the difference between self-ratings and expected ratings is statistically significant (Table 1). By contrast, parents predict that teen-agers will significantly underrate adults on only six items (2, 3, 9, 10, 17, 19; Table 2, col. 2 minus col. 4).

The items on which the parents feel that adults will be underrated can be seen as relating to tension in interpersonal relationships. However, parents believe that qualities of maturity which are relatively independent of interpersonal relationships will either be accurately perceived by the teen-ager or even overrated. These ratings suggest that parents feel they will be seen as mature but unsympathetic or ill-intentioned in interpersonal affairs. They feel that they will be seen as more "uncooperative," "ungrateful," "impatient," and "thoughtless" than they really are.

Ratings Indicating Expected Perception of Status Differences

Predictions of the Self-Ratings of the Other Group

The disparities already mentioned are emphasized by the belief each group has about the ratings which they think members of the other group will give themselves. Two sets of predictions are involved: the adolescents' predictions of how adults will rate themselves, and the parents' predictions of the ratings teen-agers will give themselves (Table 1, col. 4; Table 2, col. 3). Both groups believe that members of the other status group will have very favorable opinions of themselves. Parents predict that teen-agers will rate themselves above the scale mean on all items. Adolescents believe that adults will rate themselves above the mean on all items. The difference between the two sets of predicted self-ratings is very small.

Disparity between Predicted Self-Ratings and Own Ratings

The parents' predictions of the teen-ager's favorable opinion of himself represents a belief that teen-agers will overestimate themselves on the traits in question, since the parents themselves give a generally lower rating to teen-agers. In contrast the adolescent expects that parents will see themselves in the same favorable light as he sees them. In effect, teen-agers are expressing confidence in the parents' judgment, even when the parents are evaluating themselves. By the same rationale, parents expect that teen-agers will be conceited, or, at best, unrealistic when judging themselves. This expectation is expressed by significant differences on 17 of the 20 items (exceptions are 13, 18, and 20; Table 2, col. 1 minus col. 3). There is only one reversal: parents say that teen-agers will underrate themselves on "moral" behavior.

Comparison of the rank ordering of items revealed that parents believe teen-agers will emphasize items having to do with readiness for emancipation from parental control. Such items as "responsible," "mature," "consistent," "stable," and "self-directed" rank higher in the predicted self-estimate than in the parents' ratings of adolescents. In complementary fashion, parents expect that adolescents will rate themselves *relatively* low on "self-controlled," "cautious," "neat," and "patient." This indicates that these parents believe that teen-agers think of themselves as ready to lead their own lives—but along rather hedonistic lines.

The Expected Perception of Status Difference

A measure of predicted status differential between the two groups may be obtained by a comparison between the view the adolescent has of his reputation with adults and the view he thinks adults will have of themselves. This is the teen-ager's prediction of his relative status in the eyes of the adults.

Considered in these terms, the data show that *adolescents think adults will see themselves as vastly superior to the average teen-ager* (Table 1, cols. 3 and 4). Further, adolescents predict that adults' opinion of the status difference will be much greater than adolescents believe it is (Table 1, cols. 1 and 2 compared with cols. 3 and 4).[3]

Parental Attitudes and the Ratings by Own Teen-Agers

It was assumed that the ratings given by adolescents to the "average adult" and to the "average teen-ager" were not unaffected by the attitudes encountered in their own family experience. The ratings of parent-child pairs were examined, therefore, to determine the degree of association between mother-child pairs and between father-child pairs.

The resulting coefficients offer evidence that the mother's attitudes are more influential than the father's in determining the attitudes of the teen-agers. The mother's perception of status difference (Table 2, col. 2 minus col. 1) correlates significantly with the extent to which her teen-agers feel underrated (Table 1, col. 1 minus col. 3). That is, the larger the status difference that the mother perceives between adults and teen-agers, the lower the reputation that her adolescent predicts teen-agers have. This relationship is highly significant and holds for both mother-daughter and mother-son pairs (Table 3). However, the father's perception of the adult–teen-ager status difference appears to have virtually no effect upon the attitudes of his children as indicated by insignificant coefficients with both sons and daughters.[4]

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[3] An indication of the characteristic adolescent attitude toward their status in adult minds is seen in the relatively small range that appeared in the predicted ratings. In rating their own group and the adult group, the range between highest and lowest mean rating is three scale steps; in the predicted ratings this range is two scale steps. The adolescents, then, are predicting that the average adult will show little discrimination in evaluating teen-agers and will underrate them even on traits on which the teen-agers feel most competent and acceptable. The parents do not make a comparable assumption in the ratings they expect from teen-agers.

TABLE 3

COEFFICIENTS OF ASSOCIATION (TAU) BETWEEN THE RATINGS OF PARENTS AND OWN CHILDREN

	Children Expectation of Underevaluation (Table 1, col. 1 — col. 3)			
	Girls	*N*	*Boys*	*N*
Parents: Perception of Status Difference (Table 2, col. 4 — col. 1)				
Mother	.55*	(13)	.59*	(13)
Father	.13	(11)	.00	(10)

* $p < .01$.

Although adolescents appear to be sensitive to their mothers' evaluations, their own ratings of teen-agers are relatively independent of parental opinion. The comparison between the ratings of parents and their children on the "average teen-ager" reveals no significant association between adolescents and either father or mother (Pearson r's of .062 and .067 respectively). The teen-ager's feeling about his group's reputation among adults thus appears to be determined in part by the attitudes of his own mother toward teen-agers as a group but he resists her influence in making his evaluation of his own group.

SUMMARY OF FINDINGS

1. Adolescents and parents agree in expressing mildly favorable opinions of teen-agers.
2. The adolescents tend to idealize adults, i.e., they have much higher opinions of adults than do the parents.
3. Adolescents see a relatively greater status difference between teen-agers and adults than do the parents.

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[4] The attitudes of fathers about teen-agers are significantly related to those of the mothers in the sample (Pearson $r = .44$) but their perception of the status difference between the two groups is not (Pearson $r = .18$).

4. Adolescents believe that the average adult has a generalized tendency to depreciate teen-agers. They feel that teen-agers have a uniformly low reputation among adults.

5. Parents anticipate that teen-agers will have a selective tendency to undervalue adults. They predict that adults will get lower ratings than they merit on items which refer to interpersonal relationships, but that they will be accurately evaluated on non-interpersonal maturity items.

6. Adolecents believe that the adults will evaluate themselves relatively accurately.

7. Parents believe that teen-agers have unrealistically high opinions of themselves.

8. Both adolescents and parents believe that the status difference between teen-agers and adults will be distorted to approximately the same extent by the other group.

9. The attitude of the adolescent about the relative status of teen-agers is significantly associated with the opinions of his mother about the adult–teen-age status difference. However, the opinion of his parents is not related statistically to his evaluation of the "average teen-ager."

10. The attitude of the father as expressed in the rating scales is not significantly associated with ratings of his own teen-age children.

Three trends in the data stand out as particularly relevant to parent-adolescent relationships and to theories of adolescent socialization: (a) the agreement between the two groups in their evaluation of teen-agers; (b) the perceptual distortions of both groups in predicting the response of the other group; and (c) the immense status difference between the groups that teen-agers believe exists in the minds of adults. The prominence of these trends emphasizes the difficulties faced by the adolescent in his effort to effect a transition from adolescence to adult roles and behavior.

From their own point of view, the adolescents credit themselves with an acceptable degree of achievement which, nevertheless, places their group in a subordinate position with respect to adults. This willingness to admit a differentiation between their own status and that of adults is in agreement with the views of adults, though it tends to exaggerate the status distance.

The assumption by parents that teen-agers have unrealistically high opinions of themselves is not corroborated by the data obtained from adolescents themselves. This parental belief may, to some extent, simply represent a response to, and acceptance at face value of, a protective bravado and air of competency which the adolescent assumes to protect himself, both from arousing parental anxieties and from his own feelings of inadequacy.

Our data suggest that one of the central problems in parent–teen-ager relations lies not so much in disparity between their respective evaluations of adolescents as in the fact that each group mistrusts or misunderstands the opinions of the other. Parents and adolescents thus interpret teen-age behavior and problems in different, and often contradictory, terms. For the adolescent, teen-age problems are expressed in terms of *ego functions*—

autonomy, self-control and judgment based upon exploratory experience with adult roles. For the parent, the problems of teen-agers are primarily concerned with control of *id impulses* for which, they believe, parental supervision and control are essential. Both views, of course, are to a degree realistic and the families of our study which displayed a minimum of parent-child conflict were those in which parents and teen-agers were willing to recognize the importance of both viewpoints.

The status difference between the groups probably serves a positive socializing function for the teen-ager. A moderate overestimation of the attributes of adults offers a lever for the parent in the socializing process and provides motivation for the adolescent towards increased autonomy and maturity. However, the extreme idealization of the adult by the adolescent, when it is joined with a belief that personal achievements he has made are not recognized by adults, may retard ego development and encourage behaviors which defeat the objectives of both parents and adolescents themselves.

CONSCIENCE AND CONFLICT: THE MORAL FORCE IN PERSONALITY[1,2]

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The characteristics of one's moral code determine how often and in what life situations inner conflict is aroused, influence the ways such conflict is experienced, and set limits on the techniques that can be used to resolve it. The goal of this paper is to convey the theoretical richness of the topic and to clarify some of the research implications. Therefore, we give only a brief outline of our empirical work on the acquisition of moral needs; details of the latter are presented elsewhere (1, 2, 10). Instead, we describe a number of the problems we have encountered in the development of our investigations. The paper closes with a discussion of some hypothetical interrelationships between moral standards and other facets of personality.

In using the concept of "moral needs" we refer to the *internalized* standards, the "voice of conscience," rather than simply societal rules or role expectations to which people may give lip-service without really subscribing. It is common to use the term "superego" in this connection. "Superego" refers to certain learned needs in a person that provide internal reward and punishment regardless of whether the person's actions also provoke positive or negative reactions from other people.

If this definition is accepted, it has meaning for the way we do research. In most actual life situations there is usually a good possibility that an antisocial act will have environmental as well as internal repercussions. As a result, we usually cannot tell from observing a man's behavior how much his inhibitions are motivated by fear or wish for praise, and how much by inner moral forces. Similarly, we cannot tell to what extent his disturbance following a misdeed is caused by fear rather than guilt feeling. In research on superego we need evidence of conformity to a standard regardless of reality pressures, or of guilt following violation of the standard regardless of reality pressures. In practice, this ordinarily means

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[1] This paper was presented originally at the Biennial Conference of the Society for Research in Child Development at Robert Allerton Park, University of Illinois, in April 1955, as part of a symposium entitled "Research on Conflict and Personality."

[2] The viewpoints expressed here were developed and the study mentioned was done in the course of participating in a larger project. Other investigators, who were concerned with aspects of conflict and defense different from those stressed herein, collected additional data on the same subjects. The larger project was directed by Daniel R. Miller and Guy E. Swanson of the University of Michigan, and was supported, in part, by a grant from the National Institute of Mental Health, U. S. Public Health Service. A fuller report of the methods and empirical findings stemming from an application of some of the concepts in this paper will appear in a forthcoming book (10).

[3] Now at Harvard University.

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that we have to create experimentally a plausible circumstance that permits a tempted subject to violate his norm without fear of discovery. There must be neither an *external* advantage to him from conformity, nor an external disadvantage for infraction.

This principle of eliminating risk of getting caught in a moral violation is one of the minimal prerequisites for defining moral standards in accordance with our theoretical conception. It will make easier the task of describing other prerequisites if we first concretize our work by illustrating the kind of research design used and by giving the gist of our findings.

We used a story-completion device as our measure of guilt (1). In each story-beginning the hero violates a commonly held moral standard; for example, he disobeys his mother or has hostile thoughts about a friendly male authority figure. The story is so phrased that the infraction either cannot be detected or cannot be attributed to him unless of course he gives himself up or gives himself away, acts which would in themselves be evidence of a guilt reaction.

Subjects were 112 junior high school boys from a wide range of economic backgrounds in Detroit. Factors such as age, intelligence, religion, race, and ethnicity were controlled. The boys were asked to finish each of the stories, and we coded intensity of guilt from the story-endings. Since we were interested in relating childhood experiences to intensity of guilt, we interviewed the mothers of the boys in their homes concerning the boys' upbringing.

In order to test whether events early in life are factors in moral development, we asked the mothers about their sons' weaning and toilet training. In addition, we inquired into current disciplinary practices. From their reports, we divided the group into those who tended to attack the children directly and those who used "psychological" measures such as reasoning with the child and appealing to his love for the parents.

Our results indicate that it is possible to predict from certain experiences in infancy the moral feelings of children 12 years later. We found significant relationships between intensity of guilt over hostile thoughts and the variables of age of completion of weaning and age of bowel training. Current disciplinary procedures also seem to be connected with guilt over hostile thoughts. The over-all direction of the results indicates associations between high guilt about aggression and early weaning, early bowel training, and psychological discipline. The discipline finding has since been corroborated with a sample of adults (2). But in analyzing the items concerning disobedience of the mother, the results provided us with a puzzling contradiction to the findings for guilt over aggression. High guilt over disobedience was associated with *late* rather than early weaning and *late* rather than early bowel training. A possible interpretation is that guilts in different moral areas may have different developmental origins and that it is unjustified to use a single measure of "guilt" in advancing hypotheses about the genesis of superego. Incidentally, social class was worthless as a predictor of guilt over both disobedience and hostile thoughts.

What are some of the problems in method that had to be resolved in order to do this kind of research? First there is the problem of control of substantive *content*: that is, whether the standard concerns anger, stealing, disobedience or some other value area. A second dimension of moral needs that has to be controlled is the *height* of the standard. This refers to the degree of impulse-expression permitted. For example, one person might be guilty for stealing a three-cent stamp but another might experience no guilt unless he stole a whole sheet of stamps. The *breadth* of a standard is a third dimension that has to be controlled. This takes into account the range of situations in which the standard applies. A broad standard might state, "You must never steal under any circumstances." A narrower one might be, "You must not steal *except* from the rich, or when starving."

A fourth dimension is the *severity* of the standard. Two boys might each have a standard which forbids stealing anything over a dime from one's mother, but if each stole 50 cents, one of them might be much more remorseful than the second. In such a case, the standards are the same in moral area (theft), the same in height (prohibition of anything over a dime), and the same in breadth (from the mother), but differ in intensity—what we call the severity.

In the research we have briefly described we wished to study this last variable, severity. We chose as our measure the intensity of guilt in the subjects' story-endings. In order to be able to interpret the results, we had to keep content, height, and breadth constant. For this purpose, we found the story-completion type of test very satisfactory, since the beginnings can be expanded to include all the details necessary to specify the exact nature of the moral violation as well as to eliminate convincingly any risk of the hero's getting caught. To illustrate the importance of controlling moral area, height, and breadth, suppose we asked a child to finish a story which reads, "Henry steals some money from a man asleep in the park. Nobody sees him do it." Height is not held constant; we cannot know how much money each child imagines it to be. Nor is breadth controlled, because we have not specified anything about the man who is the victim or about the motive for Henry's action in stealing. If we used such an item, we could not be sure of the meaning of the results. Different degrees of guilt in the story-endings might reflect not differences in severity but varying interpretations by the children of the test item.

We have now raised two of the primary considerations in investigating internalized moral needs, the principle of elimination of risk to the violator, and the principle of controlling such factors as height and breadth. A third issue is that there must be some feasible way of measuring guilt. Once a coding scheme was devised, guilt phenomena could be coded reliably and not too arduously from the story-endings. But there is a major complication in inventing a coding scheme for detecting guilt. If subjects were always obliging enough to experience guilt in the form of conscious self-blame they would be very helpful to researchers. Unfortunately, they are sometimes unaware of guilt reactions because of defenses which they use high school boys how they know whether a contemplated action is right or wrong. Some boys told us they "just know," but others, relying apparently on a more external guide, say that in making a moral decision they "think what mother would say." Our results indicate that type of perceived source is related to social class and other indices of social position.

Like or dislike of conscience is another aspect that could be studied. Some people feel burdened by their standards; others take pride in them. One instance of this rejection of standards is the rebelliousness of the adolescent, who may do his best to deny to himself any allegiance to the parents' values. Dislike of conscience may be one of the conditions giving rise to a tendency to defend against guilt.

A related factor is that of the relative *emphasis on ideals as opposed to prohibitions*. Some persons may experience their self-admonitions chiefly in the form of "don't's." Others may phrase theirs in more positive terms: "do well" rather than "don't fail"; "be honest" instead of "don't lie and steal." Conceivably, negative emphasis may be associated with dislike of conscience as well as with the ways the parents have exhorted and rewarded or warned and blamed the child.

Vigilance is still another factor that can be investigated. Some people are on guard all the time—moral needs are salient for them so that these individuals have to serve as "vigilantes" in watching out for possible ethical lapses in their own behavior and often in the actions of others.

With regard to all the dimensions we have mentioned, the degree of generality of each over various moral areas and the interrelations of the factors would need to be determined for a full description of the organization and functioning of a person's moral needs.

However, much broader research problems emerge when we consider moral needs in the context of the entire control system of the personality—that is, in addition to the skills that enable an individual to defer pleasure for greater ultimate gain, to think before acting, to anticipate external dangers, and to defend himself against the internal danger of being overwhelmed by tension from unsatisfied needs. Let us say here that the theoretical formulation we are about to present is offered as a set of hypotheses and arbitrary definitions that may be fruitful for deriving testable propositions and designing research, not as assertions that have already been tested experimentally. In thinking about inner conflict and its implications for personality, we believe there are three chief reasons for taking into account the individual's moral needs. The first of these is that moral needs are so often a factor in *causing* conflict. It is true that a person may experience a conflict that does not involve internalized moral standards. He may be torn between a wish for gratification of some sort and an external danger, such as the prospect of parental disapproval. But external dangers can often be evaded, whereas, when the individual's own moral needs are opposed to his wishes, there is an internal danger of *self*-disapproval that cannot be dodged. In our society, if not in all societies, important conflicts commonly have internalized moral components.

The second reason for concerning ourselves with moral needs is that the *outcome* of conflict is largely determined by them. As a result of the moral forces within him, a person must either control himself, often distorting his perceptions defensively to cope with the tension he feels, or else he must suffer the guilt which will accompany a violation of his standards. If the moral needs are more powerful than the temptation, the person will inhibit himself, but having an unsatisfied wish, is likely to use defense mechanisms to allay the resulting tension. He will be able to avoid defending only if an adequate substitute satisfaction can be found, or if his personality organization is strong enough to stand the feeling of frustration (unfortunately, no one is this mature at all times). If the temptation is more pressing than the moral needs, the individual seeks gratification, but becomes guilty, and this too may lead to defense. In the latter case we speak of defense against guilt to distinguish the circumstance from defense against impulse. As students of personality, our second reason, then, for being interested in moral needs is that they motivate delay of gratification and the use of defenses, and they cause guilt.

Our third reason is that quite apart from determining the fact that defensive distortions are used, the moral aspects of personality cause individual differences in ways and frequency of defending—that is, in characteristic ways of resolving conflict. To put it another way, the nature of a person's moral needs affects what has often been called his "character structure." In the first place, of course, the particular impulses or guilts a person defends against are determined by the substantive content of his moral needs. One person tends to become disturbed and defend primarily because of the unacceptability to him of his hostile feelings or behaviors, another because of sexual wishes or sexual activities. The *frequency* of defense is affected by the height of the standards. If a person's standards in the area of aggression are so high as to forbid the expression of even a little bit of anger toward an authority figure, then every time that person's employer is irritating, the person will have to defend.

Another consideration in predicting frequency of defense is the breadth of the standards. If one must avoid anger not only toward father-figures but also toward mother-figures, brother-figures, cousin-figures, inferiors, children, and dogs, then there are many situations in which one may have to defend. Frequency of defense is influenced by still another aspect, the severity of the standards. The more intense the guilt a person will experience for a violation, the more likely he is to defend against the forbidden impulse, and if temptation overcomes him and infraction occurs, the more likely he will be to defend against guilt.

In addition to determining the content of the impulses or guilts defended against and to affecting the frequency of defense, the nature of the moral needs influences *which defenses are used*. Some defense mechanisms may be ruled out because they involve behaviors that are morally unacceptable to the individual. For instance, the defense of restriction of the ego (7) may be unavailable to a person who would define it is "quitting." Some mechanisms may come to be used more readily because they are especially suited to warding off those particular impulses or guilts with which the individual is concerned. Theorists (e.g., 7) have speculated that repression may be of particular value in coping with sexual desires, and other processes of distortion may be of more use against anger. Where height, breadth, or severity of a given standard necessitates frequent defense, those mechanisms will be more relied upon which afford a constant protection, although at the expense of a more lasting change in the personality. An example is "reaction formation" ("reactive alteration of the ego") (7). When this defense is used against anger, the person becomes incapable of the affect, even when it is appropriate to the situation. He is always kind, and the angrier he becomes unconsciously, the kinder he becomes on the surface. The more severe the internalized prohibitions, the more reaction formation will take on the generalized form of a character trait (4).

Thus, quite in addition to the intrinsic interest and importance of moral needs, the fact that they are so relevant for the theory of defense mechanisms and inner conflict argues that their investigation will pay dividends.

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